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100% Rise in User Costs Predicted Within 5 Years

WASHINGTON, D.C. — The user costs of information processing probably will rise 100% within five years, a market research executive told the Law of Software Conference here.

But the increase is reasonable because expenditures are relatively low now, Patrick J. McGovern, president of International Data Group, said.

The increases will result from emphasis on better software as the user accepts more responsibility for the efficient operation of his systems, McGovern said.

Research by IDC has shown that basic accounting and payroll jobs now account for 44% of all computer usage, he said. And computer operations such as compiling, debugging and hardware interfacing account for the largest amount of elapsed machine time per month, he said.

By contrast, some of the more advanced usage of computers ranked well down the list of applications, he said.

McGovern attributed the current low level of software quality to the "narcotic effect" of "free" software from the manufacturers. "How could one demand prompt development of workable programs from one's own personnel the user reasoned when the manufacturer cannot supply programs to support his own machines on a lunch or bite-free basis?" he asked.

It might be logically argued that the increase in software costs we face today is one giant step should have been taken during the past few years in several smaller strides," he said.

Contending that current user costs are low, McGovern said that research had shown that the typical user among manufacturing firms, for example, invests about 0.5 to 2% of his annual revenue in information handling processes, personnel, and equipment.

By contrast, the same firm typically spends from 4 to 12% in research and development and 2 to 4% for personnel training.

When you break down the costs for information processing, you generally discover that it is the computer's ubiquity, not its effective utilization, that accounts for the vast percentage of dollar outlays, McGovern said.

The new separate pricing of manufacturer software will force the user to take more responsibility for the effective operation of his systems, which in turn will force the user to develop or buy efficient, well-documented software, McGovern noted.

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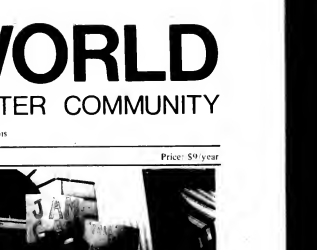

Harvard students protest against the university taking part in Project Cambridge, referred to as "Cam" on their signs. About 300 students were involved in the peaceful demonstration. (Photo by Timothy Carlson)

Project Cambridge Plans Changed After Protests

By Joseph Hanlon
CW Staff Writer

CAMBRIDGE, Mass. — Student and faculty protests have resulted in major changes being made in Project Cambridge, a highly controversial research project to develop computer techniques in behavioral science. But the changes will have little substantive effect on what the students are protesting.

The original proposal suggested vast data bases including information on *all* tribes and peoples of the world, and suggested supporting research into stability in underdeveloped countries.

As now constituted, the project bears little resemblance to the one proposed last spring nearly everything that the students objected to has been shifted out of Project Cambridge. But the research the students find objectionable has not been killed and will still depend on Project Cambridge. So the protests continue.

Project Cambridge is a joint MIT-Harvard five-year project funded for $7.69 million by the Advanced Research Projects Agency (Arpa) of the Department of Defense (DoD). Work has already begun at MIT, but Harvard has not yet approved participation by its faculty. Basically, the project is to develop analysis and modeling techniques for use on time-shared computers by researchers in the behavioral sciences psychology, political science, economics, sociology, and urban planning.

Originally, Project Cambridge was to center on one computer. The group would take over MIT's IBM 7094 with CTSS (compatible time-sharing system). CTSS was developed by MIT Project Mac under contract from Arpa.

Using the 7094 as a base, the Cambridge Project was to concentrate in four areas:

(1) Develop general analytic and modeling techniques for handling the large masses of data common in behavioral sciences.

Educate "a cadre of specialists" to work with these techniques.

Bring together as a data base a large collection of already existing behavioral science data.

Coordinate independently funded applied research which would use the data base and techniques to be developed.

Political Orientation

It was the political orientation of the last two areas that created trouble for the project. Both stressed communism and unrest in underdeveloped countries, to the almost total exclusion of other kinds of behavioral science work. The listing of existing data collections that might be included in the Cambridge Project data base contained

(1) "Files on cultural patterns of *all* the tribes and peoples of the world."

(2) "Public opinion polls from

(Continued on Page 2)

Christmas Catalog Item

Store Offers Kitchen Computer

By Kate Rachsteins
CW Staff Writer

NEW YORK — For well-to-do Santas stymied by the "woman who has everything," Honeywell and Neiman Marcus, the high fashion Dallas specialty store, have collaborated on a unique gift — an H316 "kitchen computer."

Presented at a press conference and luncheon here, the mini-computer is the featured item in this year's Neiman-Marcus Christmas catalog, which in years past has headlined such indispensable items as "his and hers" airplanes at $181,580.70, white mink chaps at $1,875 the pair, four carved jade screens for $1 million, and five tubes of flavored toothpaste (brandy, rum, scotch, curacao, and cherry brandy) for a modest $4.75.

Several members of the press, with imaginations not quite so supple as that of the Marcus brothers, came anti-patting that the announced "kitchen gift" would be a costly mink apron and matching regalia for holiday kitchen wear.

To their surprise and consternation, what materialized was a different kind of "little Honey," a general-purpose digital system designed to assume the hectic task of menu planning for the holiday hostess. Its $10,600 price tag includes a two-week programming course at a Honeywell training center.

Thus liberated from her kitchen, the inventive homemaker can enlist the system's services as golf companion, card partner, or rainy-day playmate for her children.

(Continued on Page 4)

For the housewife who has everything, Neiman-Marcus now offers a kitchen computer for $10,600. The required input/output Teletype terminal (not shown) costs extra.

On the Inside

Selective Price Changes Made By XDS (SDS)

EL SEGUNDO, Calif. — Xerox Data Systems (formerly Scientific Data Systems) is selectively adjusting prices and lowering some rental rates.

The biggest cut will be in one-to-three year lease rates. Prices will drop an average of 5% with some reductions as high as 14%, XDS said.

Three-to-five-year lease rates will remain the same, and five-to-six-year lease rates will increase 3-1/2%, the company said.

Purchase prices for large computer systems will be reduced about 3% to 12%, except that any system with less than a

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Student Protests Force Changes In Plans for Project Cambridge

(Continued from Page 1)

all countries."

"Archives on comparative communism."

"Chinese provincial statistics."

"Characteristics of Latin American countries since 1810."

"Characteristics of local conflicts and limited war crises."

"Data on youth movements."

"Data on development of underdeveloped countries."

"International propaganda output."

"Peasant attitudes and behavior."

Under the heading "Examples of Non-Methodological Research Uses of the Cambridge Project" the proposal listed nine projects "of the kind likely to be carried out during the first year that the Cambridge facility is available." Such projects would be funded independently of the Cambridge project. All but one of the projects mentioned involved communism or underdeveloped countries, including:

"Problems of the underdeveloped countries and conditions of stability."

"A study of peasant attitudes" including, Under what conditions do peasants' protests become violent?

"A major documentary collection on communism" that would probably be combined with several thousand interviews of Viet Cong conducted by the Rand Corporation.

Studies on "stability and disorder" in national government.

Finally, it was suggested that the project's 7094 would be part of a proposed Arpa computer network, which would connect Arpa contractors such as MIT, Stanford, and Rand, and would have terminals in the Pentagon.

'Suppress Popular Movements'

Student reaction stressed the political nature of the proposal. One pamphlet summed up student opinion when it said "The whole computer set-up and the Arpa computer network will enable the government, for the first time, to consult relevant survey data rapidly enough to be used in policy decisions. The net result of this will be to make Washington's international policemen more effective in suppressing popular movements around the world."

The project's sponsors willingly admitted that either form of the project would help the DoD, but they denied that it would be used for "evil" purposes. Furthermore, they denied that the methods could be used rapidly enough to aid policy decisions in crisis situations, at least in the foreseeable future.

Radical Changes Made

But the project has been changed radically since the protests began. First, the use of a central computer has been dropped. Second, no large data base will be established. Third, the Arpa computer network will not have a terminal in the Pentagon.

As a result of the first two changes, the nonmethodological research will not be as strongly connected to Project Cambridge. But this does not mean that the research the protestors find objectionable will not be done. And Project Cambridge will help.

Methods developed by Project Cambridge will be nonclassified and available to anyone who can afford the computer time to use them. And the general policies drawn up by the Project Cambridge advisory board say "The policy of the board is to provide computer time and programming assistance to the users of the methodologies still under development."

"This is now a gray area," conceded MIT Professor J.C.R. Licklider, one of the originators of the project. "The whole issue of the use of facility is very foggy at this time."

And the absence of a central data base will not prevent the aggregation of data. Individual researchers will acquire elsewhere whatever data bases they need for their own research.

The changes in Project Cambridge are not all attributed to student protest. Some, according to Licklider, reflect changes in thinking on the part of the participants. But whatever the reasons, the changes are unlikely to still student protest.

Use in Crises?

Will Project Cambridge enable the DoD to use computers in crisis situations as claimed by the student protestors? That answer is not clear. Professor Ithiel de Sola Pool, the other originator of Project Cambridge, used his own project, ComCom, to suggest limitations and possibilities in this area.

ComCom is a study of mass communications in closed societies. Computer simulations have been conducted of the impact of foreign broadcasting on the Soviet Union, Communist China, and several underdeveloped countries. With ComCom, "we are able to estimate what kind of effort is necessary to saturate what segments of the population," according to the Project Cambridge proposal. In developing countries, such research "may help to produce estimates of the conditions necessary for reaching villagers and the costs of reaching them."

But the difficulty, according to Pool, is that at the present state of the computer art, such a simulation requires several months to run. Using methods developed under Project Cambridge, it might be possible to cut the time down to a few hours, it could then be used to predict the impact, say, of a presidential speech on a foreign country, according to Pool.

But this would be just one aspect of a foreign crisis. Using the tools developed by Project Cambridge, the DoD would not have time to evaluate many such aspects under pressure of a crisis, at least not in the immediate future.

Distrust of Social Sciences

Pool argues that even when these tools are available, it will be a while before they are used because of the distrust of the social sciences by government officials. He noted that public opinion polls existed for 30 years before politicians began to consider them during election campaigns.

He also argues that even if techniques could be developed which allowed rapid analysis of all parts of a crisis, it probably could never be used. To explain, he cites the stock market: if it were possible to use a computer to completely determine the movement of the stock market, the very existence of such information would change the stock market, so the determination would no longer be accurate. Similarly, he argues, detailed computer-aided determinations of actions in foreign countries could not be used, because their existence would affect change.

Political, Not Technological

Despite disagreements as to the extent to which the project can be used by DoD, both protestors and supporters agree that Project Cambridge will aid the Pentagon. So the basic difference of opinion over the project is not technological, but political: does the DoD act in the best interests of the people or of the "military-industrial complex."

Harvard Professor Karl Deutsch, an opponent of the war in Vietnam and a participant in Project Cambridge, argued: "If an organization is radically evil, such as the Nazi government, any increase in its capabilities or knowledge seems likely to do harm. I do not believe that . . . the DoD is a radically evil organization. I think that mankind is more threatened by ignorance or errors of the American or Chinese or Soviet government than it would be by an increase in the social science knowledge of any of these governments."

Hayward R. Alker, MIT professor of political science, declared that Project Cambridge "may help reduce Pentagon tension-related, ideologically based distortion tendencies, which have sometimes caused disastrous wars of miscalculation."

Prevent Vietnam?

Licklider argued that techniques being developed in Project Cambridge might have changed the Vietnam war, had they existed.

"If we had had a few years ago the basic methodologies to be developed by Project Cambridge, imaginations would have reached much further ahead. We would have seen the possibility of being sucked in." With such methods, "every escalation would have been played out against many cars. It might have broken the grip of the 'in-group' and given people with alternative suggestions a chance to try out their ideas."

Licklider continued: "Nothing like interactive war-gaming was used at that time. The war gaming techniques the Defense Department has used are terribly primitive."

On the other hand, the *Harvard Crimson* argued that "our experience in this country at this time suggests the . . . American government does not have the welfare of the people of the world as its guiding principle. On the contrary, we have seen how all over the . . . world the United States is normally to be found on the side of 'stability' and reaction, on the side of the ruling elites against the underlying population."

The students and faculty members who object to Project Cambridge feel that the DoD will use these techniques not to avoid future Vietnams, but rather to find less costly and more efficient ways of handling such conflicts. They charge that if the DoD feels that it can put down a revolution with less difficulty than it has had in Vietnam, it will be likely to do so.

Furthermore, critics feel that with a system only as efficient as the one suggested by Pool, the DoD would be able to use Project Cambridge techniques in many noncrisis situations, such as helping to plan the overthrow of governments opposed by the United States.

Critics also feel that the techniques developed by Project Cambridge might be used against the people of this country. They cite a section of the proposal which begins, "Arpa may properly wish to inquire as to the relevance of what we propose to its program" and contains a discussion of "urban problems." To many, this suggests manipulation of ghetto residents by the DoD.

Prepare Arrest Lists?

Finally, the proposal talks about the study of "linkages of the individuals: who belongs to which units, listens to or influences whom." In combination with other parts of this proposal, this suggests the use of real-time studies to prepare lists of people for arrest in ghetto riots or uprisings in foreign countries.

The political controversy is far from being settled. Student protests against the Cambridge project have occurred this fall at both Harvard and MIT, and Harvard has not yet approved faculty participation in the project.

At Harvard a subcommittee of the Committee on Research Policy of the Faculty of Arts and Sciences is considering the project. It will report to the full committee (probably late this month), which will in turn report to the Faculty of Arts and Sciences, which in turn votes on whether to recommend approval to the Harvard Corporation.

One member of the subcommittee is Harvard Professor Anthony G. Oettinger, past president of the Association for Computing Machinery and a target in last spring's uprising at Harvard because some of his research is funded by the Central Intelligence Agency [CW, Apr. 30].

It is unclear at this time what decision the subcommittee will reach. But it is clear that student and faculty protest against Project Cambridge will continue at both Harvard and MIT.

Students demonstrate against Harvard University participation in Project Cambridge. R&D usually stands for research and development. (Photo by Timothy Carlson)

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Maintenance of Leased CDC Systems Now Optional

By Ronald A. Frank
CW Staff Writer

MINNEAPOLIS, Minn. – In a clarification of an earlier unbundling and price increase announcement, Control Data Corp. told its customers last week that maintenance of leased systems, as well as hardware, software, and education, will be individually priced. The unbundled pricing will take effect Jan. 1.

William Norris, CDC board Chairman and president, said that the customer will know for the first time the dollar value of exactly what he is buying.

Although the net effect of the total unbundling has yet to be determined, CDC corporate sources say users will face across-the-board price increases of about 5%.

New software products released after the new prices take effect will be available under a licensing agreement on an individual charge basis. Included in the software costs are a one-time installation charge, plus a monthly royalty fee for "unlimited use" of a license allowing the user to operate the software on a specific central processor system. Use of software on additional mainframes at a customer site will cost an additional 20% of the basic royalty and 50% of the basic installation charge.

When a CDC system is delivered to a customer, no installation charge will be made for the customer's selection of one operating system, one business compiler, and one scientific compiler. The monthly royalty fee will be charged only when the customer begins to make "productive use" of the software.

Some representative software costs will be:

6000 Series Operating System, $600/month license fee, $3,000, one-time installation charge.

6000 Series Fortran, $200/month license fee, $500 one-time installation charge.

3000 Series Cobol, $100/month license fee, $500 one-time installation charge.

All CDC software released up to the end of 1969 will continue to be supported for both existing and new users free of charge, according to Thomas Parkin, vice-president for software operations.

For users selecting the do-it-yourself maintenance, specialized training will be provided at Control Data Institute, the CDC training affiliate.

The in-house system maintenance option previously was available only to customers purchasing CDC equipment. To supplement a customer's maintenance capability, CDC will furnish spare parts, tools and test equipment, documentation, and diagnostic programs at fixed charges.

For customers who run into problems with maintenance, software, or any other area requiring CDC expertise, the company will make available professional analyst services. These services will be classified according to application complexity and equipment being used.

Rates for professional analyst support services will vary from $22 to $35/hour depending upon the course classification required to accomplish a defined task.

All separately priced items including software, and maintenance will be educationally supported by the 17 CDC Institutes in the U.S., according to the company. Prices for the training courses will be "consistent with the complexity and duration of the course offerings," CDC said, however, that the firm "assumes no responsibility for student performance after course attendance."

The per-student cost of courses will range from $125 for "Digital Computer Concepts I" to $1,100 for the "6000 -Scope Workshop," with most of the courses costing about $250 per student.

100% Rise in User Costs Is Seen Within 5 Years

(Continued from Page 1)

The user search for such software already has begun, he said. Research has shown that 18 "brand name" software packages account for 42% of a market that contains some 487 software packages, he said.

Joan Van Horn, president of VHP Systems, a service bureau, told the conference that unbundling of software prices will force an increase in service bureau rates and limit the number of application packages that bureaus can offer.

But the full effect of unbundling won't be felt "until the advent of the next round of computers, designed and priced with this marketing strategy in mind," she said.

Bureaus now have available many generalized application programs that they obtained free, but when they have to select among priced items, there probably will be considerably less compatibility between service bureaus, she said. This means the ability to transfer jobs quickly between bureaus will become much more limited, she added.

Noting that by judiciously combining hardware and software, it is possible to have a licensed program resident in one CPU and then to access it from all over the country, she foresaw a trend toward multiple computer installations and cross-connected systems.

C.W. Fritze, Control Data vice-president for corporate planning, told the conference that the precedents of the automobile industry in holding manufacturers liable for poor design and assembly should not apply to "the computer manufacturer because he can not control or even foresee the end use of the system." Control Data has taken a similar position in the Technitrol suit. [(W. July 2).]

Store Offers Computer To Ease Kitchen Work

(Continued from Page 1)

Just so the man of the house won't feel abandoned once he has financed the operation, the 316 is capable of performing numerous services for him such as balancing his deflated checkbook, tabulating interest and loan calculations, preparing his income tax and maintaining his investment portfolio.

To conjure up nutritionally balanced, tasty, and eye-pleasing meal plans, such as the one served in the conference, she simply enters the appropriate numerical code for any of 21 major food categories. The printer then provides her with a full dinner menu planned around any of 85 entrees, including selections of beef, veal, lamb, pork, ham, game, chicken, trout, lobster, cheese, eggs, and pasta.

For finicky or allergy-prone diners, substitutions can be obtained by entering additional codes.

The menus were originally compiled by food consultants from Honeywell and Neiman-Marcus. They called the culinary combinations from a total of five cookbooks – three general-purpose ones by Neiman-Marcus food specialist Helen Corbitt, plus *Great Italian Cooking* and *La Cuisine*.

If the preplanned menu selections don't suit her fancy, the housewife programmer can replace them in the 16,000-word memory with favorites from her own cookbooks. Or, if dieting after a holiday splurge, she may choose to reprogram for choices that total a maximum permissible number of calories.

Nieman-Marcus board chairman Edward S. Marcus says the firm anticipates selling "between three and 30" of the 316s as Christmas gifts. Honeywell is a little more cautious, however, and has only three ready for Christmas delivery.

XDS Cuts Some Prices, Raises Others

(Continued from Page 1)

standard memory (24K) will cost slightly more, XDS said.

The pricing policy will go into effect Jan. 1. Customers with undelivered orders placed after last Aug. 1 and those placing orders now have the option of selecting either the existing or revised purchase or lease agreements, provided they do so before Jan. 1, XDS said.

Customers who are leasing Sigma equipment may choose to take advantage of lease rate reductions at the time their lease terms expire. Purchase credits accrued under a current lease agreement will be transferred to a new lease agreement, XDS said.

XDS cited three examples of these price adjustments:

A Sigma 7 batch system with 64K words of memory, a 12.5-million-byte random access storage, four tape transports, card equipment, and a line printer sold for $1,014,000 before the adjustment. Its sale price now is $976,000, a 4% reduction. The one-year lease price is reduced from $26,965 to $24,100 per month, 10% reduction.

A Sigma 5 time-sharing system with 32 lines, a 48K word memory, high-speed random access storage, system tape, card reader, line printer, and necessary communications equipment had a sale price of $698,700. Its price now is $679,200, a 3% reduction. Comparable one-year lease prices $18,532 to $18,840 per month, a 9% reduction.

A Sigma 5 batch system with a 64K word memory, a 12.5-million-byte random access storage, two tape units, card equipment, and a line printer sold for $870,000. Its new price is $800,000 – an 8% reduction. The same system had its one-year lease price reduced from $23,025 to $19,700 or 14%.

Data Entry System Offers 3-Way Input

SILVER SPRING, Md. – A new data entry system, known as the Series 6000, offers the ability to pool onto an IBM-compatible tape station, enter data directly into a computer, or write data onto the unit's own tape station. Priced at about $7,000 per station and available in configurations from two to six stations per system, the Series 6000 can handle two control programs, variable-length records, and blocked data entry, according to Data World Entry Systems Corp., the manufacturer.

Oriented around a small, desktop, console/keyboard, the unit offers complete controls over tape and data entry functions. The unit displays the data entered one character at a time, and requires one output tape station for each input keyboard.

Single units, containing one keyboard and one magnetic tape station, cost $7,700 each. The 360-compatible 9-track tape unit costs $8,000.

Rental prices for the system range from $324/month, over a 15-month minimum rental period, for the two-station system to $840/month for the six-station system. The IBM-compatible tape station rents for $160/month.

The Series 6000 is scheduled to debut at the Business Equipment Manufacturers Exhibition this month. Initial deliveries of the unit are scheduled for December of this year, according to Brian T. Cunningham, company president.

Computer Entry Systems has offices at 12050 Tech Road here.

Series 6000 terminal

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BPA Membership Applied For

Time-Sharing Systems Special Problem To CPAs Trying to Follow Data Flow

By Phyllis Huggins
CW Special Correspondent

LOS ANGELES — Time-sharing systems give CPAs the willies.

"We are terribly concerned about the security of data," said Jerome Farmer, new chairman of the Committee on Computers and Information Systems of the American Institute of CPAs.

Interviewed at the institute's annual meeting here, Farmer said:

"We can audit around or through a computerized system, but with time-sharing all that is needed is one terminal hooked up and the data comes in in one form and goes out in another form — such as a paycheck — with no means of audit trail. Take a system with 150 terminals hooked up in remote offices, with data moving in and out from all of them and you could have an auditor's nightmare."

An auditor is hired by a company, paid by that company, but obligated to represent the stockholders and the public's interest in certifying that financial data is fairly represented, he said.

To certify the data, CPAs have to know what happens to it in the computer. They have to know that the computer program has not been tampered with and that the data is protected from adulteration by outside sources. These sources include input from remote terminals or mix-ups with another company's data such as might occur in a service bureau environment.

At present, about 300 CPA firms in the U.S. have computers in-house. About 3,000 CPA firms use service bureaus. The institute has a membership representing 15,000 firms.

"CPAs represent clients. When the client goes onto a computerized system, the CPA has to become involved. In general, our profession views computers as an opportunity and a challenge, rather than a problem," said Farmer. "We became aware that we were on a collision course with computers about five years ago and have taken steps to prepare for the changes. Our biggest problem is measuring the rate of change."

Several questions on EDP are now part of the CPA exam. The intent is to assure that the CPA includes EDP knowledge as part of his expertise. A book, *Auditing and EDP*, was published by the institute. A five-day EDP course on video tapes prepared by the Canadian Institute of Chartered Accountants is sent around the country for local training sessions. The committee headed by Farmer has four advisory subcommittees: EDP professional development, auditing EDP systems, liaison with manufacturers, and system development and program exchange.

"CPAs must know computer concepts and be good systems men. Every auditor should be knowlegeable enough about EDP to use it as a tool. To be able to express an opinion as to the fairness of a company's financial statement, he has to review the system of internal control," Farmer said. "Computer programs now manipulate data and instructions. There may no longer be a 'hard copy' trail. It's done inside the system. The auditor is interested in knowing how the data got there and how it is handled."

Along with the benefits, several problems arise in the use of service bureaus. Of interest to CPAs are the following:

Who authorizes changes in the programming systems and what are they?

Who owns the data if a service bureau goes broke?

Does the customer's data become part of an estate?

Who has the legal liability for errors?

Should the client be notified of any changes in the method of handling his data?

What error correction procedures does the service bureau have?

Does the CPA have the right to see the records and the program?

Steps currently being taken by CPAs in relation to computer data include stopping in on a "surprise" basis at a client's company and checking procedures. Data is then sampled to make sure it is following the steps it is supposed to. Some firms have developed generalized auditing programs which permit them to audit within a client's situation. One firm writes a specific program for audit of each client's data. This permits it to do an actual systems evaluation and see if there have been any changes in the manner in which data is handled.

Procedures being developed by CPAs may be applicable to other computer applications where integrity of data is critical.

Auditors Told to Learn How to Cope With EDP

NEW YORK — "In too many cases, the computer and auditor are relative strangers," according to a computer auditing expert.

"Companies are trying to do today's work with yesterday's auditors as too many of them never have become really involved with computer systems," Joseph J. Wasserman told the New York Chapter of the Institute of Internal Auditors.

"Auditors who never even had a nodding acquaintance with the older systems now face a huge gap between the ledgers of the past and the integrated electronic data processing systems of today and tomorrow," the former AT&T manager of auditing said.

"Unless auditors become intimately acquainted with new developments now, they will not even know what they face, let alone be able to cope with it."

Wasserman, now president of Computer Audit Systems, Inc., told the auditors that they must learn to develop auditing techniques that are foolproof and wholly adequate in the prevention or detection of fraud, theft, and error.

"Actually, programming errors and bugs in computer systems are costing more than all deliberate attempts to steal through the machine," he said. Modern business must realize the full potential of the computer and must protect itself against ordinary human error. With no criminal intent, a programmer can scramble records and cost a company thousands of dollars before the error is found and corrected," he said.

"Nobody can guarantee systems that are foolproof, but the best line of defense against either error or fraud is a combination of properly supervised operations, and auditing techniques that incorporate good management controls," Wasserman said.

Honeywell, Burroughs Announce Low Cost OCR Units

Optical readers, particularly in the under-$10,000 class, seem to be becoming popular these days.

The two newest entries in the field are from Honeywell, with its Type 243 optical document reader, and Burroughs, with its Series S optical and MICR encoding units.

Honeywell

The Honeywell unit leases for about $1,500 per month, and offers the American Standard OCR-A type font.

Up to 70 characters can be scanned for each document on a single pass.

Various programmable commands are provided to handle reading, stacker selection, and rejection of documents.

The unit contains three stacker pockets and can also read mark-sensed documents, according to Harry E. DeSmet, company group product manager.

The unit may be connected to any Series 200 computer except

New Products

the 8200, according to DeSmet, and is priced to provide economical operation for companies processing as little as eight thousand documents per day through the normal keypunching systems. Deliveries are scheduled for next year.

Burroughs

The Burroughs announcement consists of a family of small optical encoders capable of encoding MICR and OCR fonts.


Honeywell OCR


Burroughs OCR


Disk Drive

The units are related to a recently announced reader/sorter, according to Ray W. Macdonald, company president.

The S100 offers a single pocket selector, while the S200 offers 5, 9, or 13 pockets. The units will, according to the company, encode the E13B font used in banking, as well as the CMC-7 font, used widely in Europe.

The data to be encoded is buffered, permitting the complete five- or seven-field encoding of each check in a single pass. The machine prints at 20 char/sec, after the document is released.

The document transport system somewhat resembles a model slot-car race track, permitting the operator complete visual verification of the document's progress, the company says.

Purchase prices range from $5,600 to $13,900 and lease prices range from $130 to $295 per month. Initial deliveries will start next fall.

Disk Drive

WALLED LAKE, Mich. A disk storage drive unit is available in models having operating speeds identical to those of the IBM 2311 and the newly announced Honeywell 273.

Bryant Computer Products offers the memory unit in four models. The Bryant 1100 is compatible with the IBM 2311 in function, interface, and styling; and with any similar device which has the IBM 2841 controller interface, such as the RCA Spectra 70 drives.

The model 1101 is designed to interface with the IBM 2841 storage control unit, and models 1102 and 1103 with the control processor for the IBM 360/20.

Models 1101 and 1102 have the same operating speed as the IBM 2311 average random access speed of 75 msec. Model 1103 is identical to the Honeywell 273 in operating speed average random access speed of 60 msec.

The 1101 unit is designed for 16-bit computer figurations and other specialized systems since it offers a storage capacity of 7.25 million bytes and a data transfer rate of 156,000 8-bit byte/sec.

The Bryant 1100 may be purchased for $15,000 and will lease for about $445/month. All the models are immediately available for delivery in less than two months from purchase date, the company reports. Quantity lot prices will be offered to OEM manufacturers.

Bryant Computer Products is located at 850 Ladd Road.

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Editorials

Who Cares About Privacy?

Most people aren't concerned about privacy because their privacy has never been openly invaded.

And a lot of people aren't interested in supporting a fire department because they have never had a fire.

But people are forced to support fire departments in the public interest.

And it's beginning to look like they'll have to be forced to support privacy in the public interest.

Fire departments, we suspect, were most often organized by people who had had fires.

So the campaign for privacy must be openly supported by those whose privacy has been invaded. We think there are more such people than anyone realizes. We urge them to write to Rep. Cornelius Gallagher, House of Representatives, Washington, D.C., and tell him their stories.

Educating the News Media

"We feel it's imperative that the news media understand computers, what man can do with them today, and what he will be capable of accomplishing tomorrow."

The statement was made by the TRW Systems Group in announcing a series of five free seminars to be held in Redondo Beach, Calif., beginning Oct. 28 for news media personnel.

We congratulate TRW for taking this step toward better press relations for computers.

While we suspect a lot of the bad press computers have received can be laid at the door of computer people who have given reporters inadequate explanations, we also have to blame the reporters for not being well enough informed to ask the right questions.

Seminars such as these should help to eliminate this problem.

Guardian of Your Dossier

Letters to the Editor

Guaranteed Jobs Called Vital To Success of Ghetto Training

Your Oct. 1 editorial ("A Cruel Trick") describing the problems created by well intentioned professionals hit the proper key. My own experience has shown that the most significant element to be taught to ghetto types is *belief* in themselves as human beings, capable of learning and of applying their knowledge to get and hold related jobs. This confidence is firmly entrenched or blown to bits depending on their success at landing a job. I watched self-deprecating people who constantly berated their own actions develop into productive human beings, confident in their ability to learn, to apply their learning, and to compete with others in the real world.

This development was the result of a sound program with reasonable goals and *guaranteed* jobs, developed by the Delaware Valley Chapter of the ACM. Perhaps the experience and success of the Philadelphia Urban Education Committee might help others in preparing similar programs.

Frank A. Perpigha
B8501 Software Development
Large Computer Systems Organization
Defense, Space & Special Systems Group
Burroughs Corp.
Paoli, Pa.

People Should Be Trained Within Their Total Capacity

Jobs as programmer trainee are available, in quantity, but only for the outstandingly well endowed. Just as football coaches resist hiring 97-pound defensive tackles, programming managers resist hiring the intellectually impoverished for the highly intellectual field of programming and systems analysis. In larger firms especially, the best preparation is not a course in programming but a good education and its corollary, a keen mind well trained in the kinds of problem solving that the job will require. Like it or not, good test takers are also productive and promotable programmer/analysts. No one wants to get stuck with a mediocrity, and every manager knows that the bad ones are the ones that hang on forever.

On the other hand, there is in most urban areas a chronic shortage of good keypunchers and machine operators. I agree, let's train people for jobs reasonable within their total capability.

Of course, we can turn our programming staffs into sheltered workshops for the underemployed. It takes more altruism than I can muster to want to work in or manage such an operation. And I suspect that the ultimate cruelty would be to hire the underemployed and throw them into direct competition with the sharp young graduates (going for their masters in numerical science, often as not) and offer them the horrible role of class dunce. The problem with your plan is not the high risk of total failure but the high risk of mediocre success, just good enough to keep from being let go but never good enough to do work they can be proud of. Put yourself in that position for a minute, and think it over.

John R. Culleton, Jr.
Prophetstown, Ill.

Computer Operators Shouldn't Be Considered Lower Level

Re: Editorial – Oct. 1, 1969 – "A Cruel Trick"

I object to your reference "Lower-level jobs, such as computer operators . . ." These jobs are no longer "lower-level." An operator of a time-sharing, multiprogramming computer should be considered as much a professional as *any* system analyst or programmer. Too long, people have looked down on operators as low-level, but it is these people who can make the expensive hardware do the job it was designed to do.

You have an outstanding publication; however, this type of comment has a tendency to broaden the gap between operation and programming rather than tend to bring them closer together as it should be. After all, we are all trying to accomplish the same end.

Let us stand up for the operators – they have to live with the systems and programs after the *"higher-level"* people have designed them.

A. Baca
Omaha, Neb.

Regulation of Credit Bureaus -- Part III

Fierce Opposition Blocked Stronger State Legislation

By Joseph Hanlon
CW Staff Writer

BOSTON – Warning that increased computerization will increase errors, U.S. Sen. William Proxmire and others have called for regulation of credit bureaus. But if Massachusetts' experience is any indication, the credit bureaus will fight hard against all but the weakest regulation.

Massachusetts' new credit bureau law has been called the strongest in the country, but it is far weaker than several bills which were rejected. The reason, according to the sponsor of two of the rejected bills, was "fierce" lobbying pressure brought by local department stores and the local credit bureau. In addition, he said, many legislators took the attitude that only "deadbeats and bums" would benefit from credit bureau regulation.

The new law requires that if a person is denied credit or employment "based, in whole or part, upon a report from a credit bureau," that the person must be so informed, and must be given the name and address of the credit bureau that made the report.

Guilt First, Then Charges?

But under this law, a person finds out about derogatory information only after he has been refused credit or employment. He must then go out of his way to find out what the derogatory information is and to provide an explanation. Only then, can he reapply for credit or a job. Critics claim that this is equivalent to first finding a person guilty, then telling him the charges and that he has a right to appeal.

Two laws were proposed which would have given a person information sooner, but both were killed in the Massachusetts Legislature's Banks and Banking Committee. The same group also killed two proposals to insure that credit records are more up to date and a proposal to make credit bureaus financially liable for error.

'Over Before It Started'

Rep. John J. Finnegan who proposed two of the rejected bills is incensed at the action. He assumed that the bills would be approved by the committee with no trouble, but instead "it was over before it started."

Lobbying pressure was particularly important, Finnegan said. The bills "shook the entire mercantile establishment," he declared. As a result, the department stores and credit bureaus "panicked." For the first time, the Credit Bureau of Greater Boston hired a lobbyist, William Malloy. "And the biggest department stores put on a fierce amount of pressure," Finnegan added.

As a result, the only bill reported out of committee was one worked out by the Massachusetts Consumers' Council in cooperation with the Credit Bureau of Greater Boston. The law is a "whitewash," Finnegan charged.

The Consumers' Council is an advisory state agency. "In the past, it has done some remarkable work," explained Finnegan. "But just like other regulatory bodies, once they get out of their infancy, they get more oriented toward the groups they are supposed to be regulating."

'For Bums and Deadbeats'

Lobbying was not the only problem, however. Finnegan concedes that he made too little effort to educate legislators. "The people on the Banks and Banking Committee feel that such legislation is for bums and deadbeats; people who don't pay their bills. They don't realize that laws are needed to protect hard working people who do pay their bills."

But Finnegan is not giving up. "This is radical legislation, and it will take time. This year I've learned that it requires a lot of education of the committee, the legislature, and the general public." But Finnegan is confident: "These will become law. I'll go to church on that."

Next week, in the last part of this series, the rejected bills are considered in detail with arguments for and against. The main question: How complete and how accurate should credit bureau files be?

Comparison of Bills

The law that passed:

Credit grantors who refuse credit or employers who refuse employment "based, in whole or part, upon a report from a credit bureau" must so inform the person.

The laws that failed:

- Credit reporting agencies must send a copy of every report to the person reported on.
- Credit bureaus which supply written reports to prospective employers must send a copy to the person reported on.
- Credit bureaus would be liable for damages for furnishing erroneous information.
- A creditor who notifies the credit bureau of a delinquent account must also notify the credit bureau upon full payment of that account.
- A creditor who reports a credit sale or loan to a credit bureau must also report completion of payment.

EDP Errors Are Possible, Public Warned by Adapso

NEW YORK – Adapso has released the following position paper:

"The Association of Data Processing Service Organizations is deeply concerned that there may be some public misunderstanding of the nature of the services provided by the electronic data processing services industry, resulting in an erroneous belief that perfection is feasible. The consequences of reliance on such a belief could be most unfortunate.

"Perfection in the furnishing of EDP services is no more possible than in any other industry dependent upon human frailty and fallible equipment.

"The causes of human error are legion. Machine error results from an equally large number of causes, ranging from dust in a sensing device to fluctuations in electrical input. Error may also result from economic considerations, such as the practical limitations on debugging a program; thus to be certain of zero error in the trillions of computer calculations incident to any continuing commercial application, requires such exhaustive testing as to be uncompetitive.

"Undoubtedly, part of the public misunderstanding is a result of the exciting achievements of the space program, made possible by the computer. However, pin-point accuracy in space computer applications has resulted only from almost interminable testing and the broadest use of back-up equipment, not justified economically in most commercial applications.

"It may be, however, that to some extent the EDP industry is itself also to blame, because computer personnel unfortunately sometimes fail to recognize the ignorance of the lay public in technical matters. When an EDP professional says that his program is perfect or that his service never makes an error, he of course excludes that essential minimum which cannot practically be avoided; he intends no more misrepresentation of his services than the automotive salesman who promises a first rate vehicle knowing that inevitably one must come off the assembly line with defects.

"Adapso recognizes the danger that some members of a lay public may misunderstand such statements, and proposes to conduct a far ranging remedial public information program. As a first step, it calls upon all responsible EDP service industry members to distribute this position paper to customers, in order promptly and effectively to inform those key members of the public most likely to be reliant on the results of the industry's output."

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EDP Specialists and Advertising Men Meet to Study Direct Mail Techniques

NEW YORK – Specialists from the worlds of electronic data processing and advertising will join to follow a special curriculum that helps them teach each other how to use computers in direct mail.

This union will take place at the fifth DMAA Computer Institute – a five-day session of lectures and workshops to sharpen computerized direct-mail techniques. It will be held in New York, Oct. 27-31.

The institute is sponsored by the Direct Mail Advertising Association, Inc.

Commenting on the rationale behind the course, DMAA President Robert F. DeLay said, "By teaching computer experts about direct mail and direct-mail specialists about computer hardware and programming, we can harness these two disciplines for greater marketing effectiveness."

The course includes information about computers themselves and about printout, scanning, and storage devices. EDP equipment will be demonstrated during the sessions.

Other topics to be covered are: impact of the computer on direct mail, how to tell management about your plans to computerize, how to pick the right markets, and how to match the correct EDP system to a direct-mail job.

Lectures will also be given on basic EDP system design, programming techniques and costs, punched-card formatting, and computer list maintenance.

The institute is conducted by Leo R. Yochim, who has more than 20 years of experience in the EDP industry, is president of Printronic Corp. of America, and who created the standard name and address printing system (Snap).

Registration for the DMAA Computer Institute is open to members and nonmembers of the association. Registration blanks and additional information may be obtained from the Direct Mail Advertising Association, Inc., 230 Park Ave., New York, N.Y. 10017.

COMPUTERWORLD

societies

Varian Users Form 'Voice' To Expedite Programming

IRVINE, Calif. – A new user group organization called Voice has been formed to reduce redundant effort among present and future Varian Data Machine computer users in preparation of computer programs.

While the formation of the organization started only three months ago, software abstracts have already been submitted for the Voice library, by members from France, England, West Germany, Canada, and the U.S.

The initial membership list consists of over 160 individuals and companies presently using Varian computers, according to the company.

With over 700 620/i's and R-620/i's installed throughout the world, Varian predicts Voice membership will exceed 300 within the next six months.

ANSI Discusses Standards' Role In U.S. Society

NEW YORK – The program of the American National Standard Institute's 51st annual meeting will concentrate on a wide-angle evaluation of the use and effectiveness of standards in solving major public interest and industrial problems. The meeting will be held Nov. 19-21, at the Statler Hilton in Detroit.

Meeting and luncheon session topics will include: meeting industry's needs for standards, effects of standardization and metrication on world trade, and antitrust implications for standardization. The institute approves voluntary standards for computer hardware and software.

The meeting will be the first national forum held by the institute under its new name – American National Standards Institute. The change from USA Standards Institute went into effect Oct. 6.

Among the speakers will be Dr. Myron Tribus, assistant secretary of commerce for science and technology; C.W. Fritze, Control Data Corp.; T.A. Smith, RCA; John Rankine, IBM; and Walker B. Comegys, deputy assistant attorney general in charge of the antitrust division, U.S. Department of Justice.

Special events scheduled for the meeting include a banquet on Nov. 20 and a president's reception and awards luncheon on Nov. 21.

NCR Group Revealing 5-Month CIF Survey

WARWICK, R.I. – The fall meeting of the North American NCR Financial Computer Users Group will feature the presentation of a committee report on its five-month study of the central information file.

In addition, Sheldon Ruhen, president of Leasepac, Inc., will discuss "lease versus purchase of equipment," and William Coleman of NCR will present "a lock box application utilizing magnetic tapes and codes."

The meeting will be held in Denver, Colo., on Nov. 6-7. Ernest A. Beron, AVP, Old Stone Bank, Computer Center, 443 Jefferson Blvd., Warwick, R.I. 02886, can be contacted for further information.

Social Security Tax Tapes Also Acceptable to State

CHICAGO, Ill. – Companies submitting employee wage reports on magnetic tape to the Social Security Administration each quarter now will be able to use the same reporting specifications to satisfy both state and federal requirements.

The system, developed by the Social Security Administration, the Illinois Division of Unemployment Compensation, and Swift and Co., initially will be available only to companies reporting employee wages in Illinois.

"We hope to expand the program to other states as soon as agreements can be reached," said Jacob Krch, Chicago field representative for the Social Security Administration.

Krch and Walter N. Brown, methods and procedures advisor for the Illinois Unemployment Compensatidn Division, spearheaded development of the new system.

Both Illinois and the federal government have been encouraging greater use of magnetic tape reporting in the interest of economy, speed, and accuracy.

Nationally, 5,658 different companies now report some nine million employee wage details to the Social Security Administration on magnetic tape each quarter.

For each 1,000 wage items it receives in this fashion quarterly the federal government saves $13 in administrative costs over other reporting methods, according to the Social Security Administration.

Similar economies are experienced by the state, according to Samuel C. Bernstein, Illinois employment security administrator.

Only 20 companies out of those that have the capability currently report on tape to Illinois.

"Most companies cannot justify the expense of preparing separate programs for each state, nor can they justify tying up valuable computer time for long periods to run individual state reports," said Bernstein.

In most cases, he said, companies submit one report on tape to the federal government and then transcribe the report by hand – either to paper forms or to punch cards – for submission in different form to the state.

Its developers hope that the new system eventually will further lessen the reporting burden by enabling companies to submit one tape to meet all state and federal wage reporting requirements.

Data could be extracted from the tape by any of the agencies and fed electronically to all the others.

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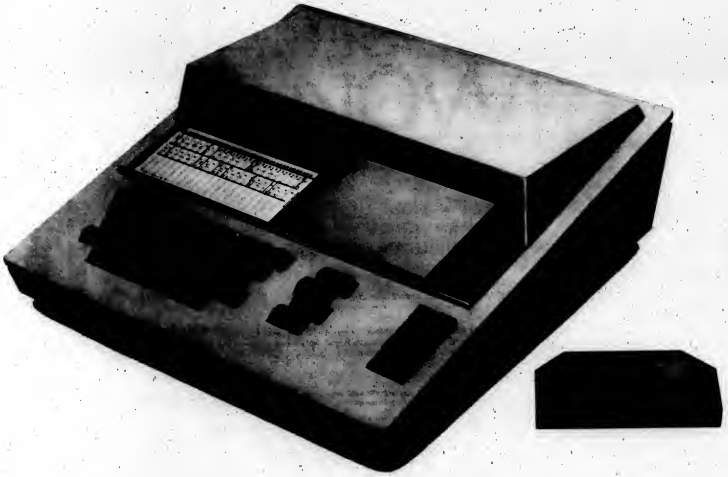

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Customer Service Requests Speeded via Bell Data Link

By Ronald A. Frank
CW Communications Editor

PHOENIX, Ariz. – A communication-oriented reporting system is helping Mountain Bell reduce reaction time to customer service requests.

Known as the operator trouble report action plan (O-Trap) the system enables switchboard operators throughout this state to process up to 40,000 monthly customer requests that often require corrective action by other telephone company departments.

When customer trouble data reports are received by an operator, she writes required pencil marks onto a tab card size trouble report form.

The report forms are then inserted into a Motorola document reader which scans the data on the report and transmits the information to a Motorola MDP-1000 data processor.

The processor separates and classifies the trouble data and routes it to the appropriate Mountain Bell service center.

"The new system enabled us to substantially reduce our costs and reaction time," said D.A. Burkhart, service foreman for Mountain Bell. "Trouble report costs dropped from 24 cents a unit to 8 cents a unit – and the average time span from 'trouble encountered' to 'corrective action started' was cut from 24 hours to 15 minutes. And, most important of all, the new set up helped to improve our service to customers."

Readers are Polled

The O-Trap system consists of six document readers that originate trouble reports and sixteen service center locations to which trouble data is routed for action by the MDP-1000 located in Phoenix.

During each business day the processor calls, or polls, the various document readers in sequence and transmits the sorted trouble information in a format suitable for Teletype readout.

Polling is accomplished through the Bell System switched network using an 801C automatic dialer and a 202C/2 Data Phone data set with reverse channel option.

Once a connection is made, the processor activates a reader hopper feed mechanism by establishing a reverse channel and brings in the trouble card information at 1,050 bit/sec.

When the hopper is empty, the reader automatically signals the processor.

The processor then disconnects and initiates dialing the next reader unit in the polling sequence.

The processor examines incoming data, discerns the type of trouble, determines the correct service center location to effect the investigation, then stores the data in a buffer register according to destination.

Communications

When information for a given service center location is ready for transmission, the processor automatically dials that location and transmits the data in ASCII code at the rate of 110 bit/sec via a telephone line.

The dialing operation here is accomplished through the use of a model 801C/1 automatic call unit and a model 103A/2 Data Phone data set. At the destination, readout is on a model 33 or 35 ASR teletypewriter.

In addition to the parity bits of the message structure that provide a basic self-check feature for the system, each message handled by the MDP-1000 is checked for validity of origin and destination and record format. The MDP-1000 can intercept clerical errors made in preparing trouble report cards for document reader processing.

In the event incoming data to the MDP-1000 is improperly coded so that the processor cannot decide what to do with the information, it is routed to an intercept station for action.

If a reader in the system fails to respond during the polling sequence – or if the processor is unable to contact any destination teletypewriter, it makes this known and identifies the trouble spot for the intercept station.

As for the future of the O-Trap system, Burkhart sees the possibility of it expanding rapidly.

"As Arizona grows, we'll have to add more cities to our network. In time, we'll be able to classify and summarize more and more of the trouble information we get by type and source of trouble.

"Before long, a state-by-state comparison of certain kinds of trouble trends should be available for management analysis.

"The net result of all this will permit us to improve our service to the rapidly growing number of customers we have."

The Motorola document reader (MDR-1000) serves as the data link between Mountain Bell's Arizona offices and the company's MDP-1000 data processor in Phoenix. The reader reads black pencil marks that appear within predefined data blocks on data entry cards.

RCA Introduces UL/I to Improve Data Base Access

By Peter L. Briggs
CW Software Editor

CHERRY HILL, N.J. – In announcing the new Spectra 70/61 [CW, Sept. 17], RCA brought a new language into focus – UL/I (for User Language/1).

Based on certain useful features of both APL and PL/1, UL/I is intended, the company says, for major use as a file retrieval language for data bases.

The initial release of UL/I, according to the company, will contain the necessary language features for inquiry/response and update transactions. Later releases are scheduled to incorporate the ability to restructure the data base on-line, the company says.

Initially, the minimum configuration will require 64K of storage, a figure the company hopes to reduce later. All work space is contained on disk, even for tape files, and several levels of hierarchical indexing are to be supported, RCA says.

Syntax

The language is completely free-format, as far as statement structure is concerned. Each section, similar in function to the sections and divisions of Cobol, will be a character string terminated with an asterisk, and can be as long as necessary, the company says. Data structures are similar to those supported in PL/1, allowing various types of data specification and various levels of nested repetitive data groups.

The language is defined as "nonprocedural," in other words, as having no formal procedural structure. Sections are called out and executed as needed, along with the related data descriptions.

The language operates on a single master data base, that may contain several "files" and "subfiles," having various permissable realationships.

The initial version, the company says, will not support interfile relationships within the data base, though that capability is scheduled for a later date.

Designed to operate with the data management routines of the Time-Shared Operating System (TSOS), UL/I can take advantage of the several different access methods supported.

A later version is scheduled to support indexed-sequential files, though initially only random and sequential files will be supported, the company says.

Simple To Use

From the examples of UL/I coding provided, it appears that it will be fairly simple to use and will require only minimal experience to code and design.

The initial version operates in only the batch mode, the company says, but the on-line version, when available, will provide a more simplified modification of the search and retrieval specifications, allowing nonexperts to make full use of the language's capabilities.

'Slang' Enters the Computer Industry To Eliminate Complex Math Solutions

REDONDO BEACH, Calif. – A user language called Slang has been designed to represent and numerically solve sophisticated mathematical problems without user involvement in numerical analysis, according to TRW Inc.

The language generates a complete computer program from user's model syntax that is little more than a problem definition, explains TRW engineer Joe M. Thames Jr.

The following features provide for this problem-solving capability: a library of specially designed solution algorithms that are assembled by language commands such as SOLVE, OPTIMIZE, and INTEGRATE; and a special computer facility for automatic specification of additional computations that are required from the user's model by the solution algorithms.

Slang is one of several languages in the programming subsystem of the computer user executive (Cue) system developed by TRW Systems.

This language is oriented toward the solution of implicit nonlinear problems, such as simultaneous nonlinear algebraic equations, implicit ordinary differential equations, multipoint boundary value problems, maxima and minima, and calculus of variations.

The Slang system, written in Fortran IV, is being used at TRW for scientific problem-solving on the CDC 6500. A prototype version has also undergone four months of field testing by a corporation engaged in engineering applications, says TRW.

Slang is described as both a procedural and command language designed for the casual user, with built-in programming ease, natural syntax rules, readability, and debugging ease.

The system may be augmented and tailored to fit individual needs. The user may program macro operators using a Slang macro facility; or he may program relocatable Slang or Fortran subroutines and define calling statement synfax for either macros or subroutines using a syntax macro processor.

Slang syntax is designed so that direct transfers are largely unnecessary, although transfer statements are provided. In keeping with the pattern of digression with subsequent resumption, Slang statements that "open" the main thought stream have associated "closing" keywords, such as REJOIN.

Slang statements are free field, allowing ample use of indentation, and Slang operators are free of unnecessary delimiters. However, as in English, blanks may have significance as separators.

The company reports that the Slang system will be available for purchase sometime next year.

TRW offices are located at One Space Park.

"We just couldn't spare him for the duration of his entire vacation period so we made some concessions to keep him on the job . . ."

Westinghouse Opens New Time-Sharing Center To Serve Virginia, Penn, Ohio

PITTSBURGH, Pa. – A Tele-Computer service center has been opened here by the Westinghouse Electric Corp. to serve customers in western Pennsylvania, West Virginia, and eastern Ohio.

The center offers computer-assisted machine programming (Camp) services for users of N/C machine tools and other time-sharing and remote-batch computer services for solving problems associated with engineering, information storage and retrieval, and accounting.

Located near Westinghouse research laboratories, the information systems laboratory, and other computer facilities, the center will market services as they are being developed.

The services offered fall into five broad categories: batch processing, remote-batch processing, time-sharing, N/C tape preparation, and systems consultation.

Basic, Fortran, Cobol, PL/1, and several Westinghouse-developed languages are among the languages available. Customers can use these services and languages when developing their own programs to solve special problems or when using programs that have already been developed to solve a wide variety of business, engineering, and scientific problems, the company reports. The new center has over 2,500 programs on file and ready for use.

Data, taken directly from machine drawings, is fed into the computers from terminals located in the customer's plant or office. The computer does all the necessary calculations and directs the terminal to punch out the finished control tape, ready to be used by the machine tool.

Campfive is specifically designed for programming two- and three-axis point-to-point, and two-axis contouring machines including punch presses, drills, lathes, and inspection machines. Campoint is a time-sharing computer service for programming N/C punch presses, drills, and other two-axis machine tools. Campturn has been designed to program engine, turret, chucking, and vertical-turret lathes.

The company's address is Box 2278 here.

Automated PL/1 Documentation Offered

CHICAGO – Data centers for providing automated program documentation on a service basis have been established by Software Documentation Corp.

Automated documentation services are being provided for all Cobol, PL/1, Fortran, Bal, Autocoder/SPS, and RPG programs. Documentation produced includes source listings, date-name, tag-name and paragraph-name cross-references; functional equate tables, tables of modified instructions, and format and coding logic diagnostics – all cross-referenced to a detail flowchart of the program logic.

Input for these program documentation services can be source card decks, card images on tape, and some master program library tape files. Cost of the services depends on the size of the program, usually about $15 for an average program, says the company.

Management is provided with documentary protection in the event of programmer turnover.

The automated documentation systems utilized for these services include Quickdraw (developed by National Computer Analysts) and RPG Aid (developed by Data Management Concepts).

The company is located at 3550 W. Peterson Ave. here.

Macros for File Control Available

UNION, N.J. – Two utility programs have been designed to assist the 360/DOS user by Macrodata, Inc.

The first, called Macrogen, provides the DOS user with a tool for modification of tape and disk files and for the creation of files of test data. The modification function is similar to the 1400 series disk record load, according to the company. Macrogen sells for $350.

The other program – Macroprt – provides the ability to call out and print any portion of a tape or disk file. It is designed as a useful tool for the debugging of new programs. This program can operate in a file protected environment. Macroprt sells for $250.

Both programs will operate on 2400 series tape drives, 2311 or 2314 disk drives and 2321 data cells.

The prices include all necessary documentation and instruction manuals. The company is located at 1478 Morris Ave.

CORRECTION

ENGLEWOOD, Colo. – The Time-Sharing Business Package discussed in a CW story Oct. 1 was developed by Computing Corp. of America, not the Computer Corp. of America, as reported.


The
Memorex
5-Year
Disc Pack
Warranty

Computer Recruits Donors and Meets Emergencies for Community Blood Bank

SAN FRANCISCO – A community blood bank has put the IBM 360/30 to work serving the blood needs of hospitals in eight Northern California counties.

Irwin Memorial Blood Bank of the San Francisco Medical Society has installed the system to help maintain inventories of life-saving blood, recruit voluntary blood donors, and aid in research and technical services.

The nonprofit facility supplies the total blood needs of 59 hospitals in eight counties. In addition to the headquarters blood bank, it maintains three collection centers and schedules mobile blood drives throughout the counties.

Applications

"We will need 100,000 units (pints) of blood during the current year," said Mrs. Bernice M. Hemphill, managing director of the blood bank, "and too often we have to call upon the same people to donate again and again. The computer is helping us develop a better recruitment system by providing constantly updated information on eligible blood donors in the areas we serve."

The computer will also help the blood bank meet emergencies. When needed, for example, it will be able to select donors by their zip codes so that those nearest the blood bank, its collection centers, or mobile units can be called. The computer also will give the blood bank rapid access to known donors with rare blood.

Irwin Memorial Blood Bank makes blood available 24 hours a day in emergencies and is open to donors seven days a week.

To meet the current demand for blood, Irwin must keep at least 2,800 units of all eight basic blood groups and types in inventory at all times, most of it stocked at the hospitals. The procedure is complicated by the fact that whole blood may be stored in refrigerators for not more than 21 days.

To conserve blood supplies, the blood bank has the constant problem of shifting aging units from hospitals with surpluses to those with shortages of particular blood groups and Rh types.

The IBM system will help eliminate this problem by providing up-to-the-minute information on the status of all blood consigned to the hospitals, including data on how many units have been processed for use by specific patients and how many are still retrievable for use elsewhere.

Irwin plans to install typewriter-like terminals in the larger hospitals, linking them to the blood bank by telephone lines.

When the hospital uses a unit of blood from its supply, a punched card accompanying that unit will be inserted into the terminal. The terminal then will report the unit number, the blood group and Rh type, and the expiration date to the computer, which will reduce its inventory balance accordingly.

Ultimate goal of the computer installation is to provide total information on each available unit of blood from the time it is given by the donor until it is received by the patient. "This will help us provide blood of the right types, in the right amounts, and at the right times for the best possible service to patients," said Mrs. Hemphill.

Transactions with the hospitals served by the blood bank also are being expedited as the accounts receivable, billing, and patients' records are converted to punched cards. To reduce the chance of error involving persons with similar names, all punched cards involving individuals are being specially coded according to a combination of name, birth date, and blood type.

Mrs. Hemphill foresees the use of data processing equipment as a key to better coordination of donor recruitment, blood collection, and blood use locally, regionally, and nationally. "This kind of planning is essential," she believes, "if blood banks are to keep pace with growing demands for blood."

WHY PEOPLE KEEP BUYING INTO A VANISHING BUSINESS.

Since the soothsayers first told us the unit record business was finished it has become fashionable to speak of it in the past tense. Fashion is one thing. The demand for economical data processing is another.

Despite what the tea leaves have said, it takes a service force of 1,000 to keep our customers happy. In the last eight months we processed 1,300 machines at our reconditioning plant.

That hardly sounds like rushing into extinction, and it isn't. But then, the unit record business is used to being called passé. Fifteen years ago the IBM 650 and the 705 were introduced and punched card equipment was supposed to slip quietly into the Smithsonian. Now it's the System/3 and the hot shots are saying our only chance is to replace the abacus in Chinese laundries.

The unit record business has changed all right. But *changed* is not *gone*. At last count, there were over 40,000 unit record installations in this country. Punched card consumption goes up every year. Many companies, large and small, still rely entirely on punched card equipment for economical data processing. Others have found the machines serve well for back-up, and computer editing. Much as the IBM 1401 (remember when that vanished?) is now being used in conjunction with more sophisticated computers.

And if you think the only people left in the unit record business are the brokers, you might get in touch with one of our sales representatives. He will assess your data processing requirements and recommend the right machines to do the job. You can rent them short or long term. Or you can buy them. Or both. However you choose to do it, we can save you money on any combination you want.

Then we back it up with a service agreement. That's why we maintain round-the-clock customer service offices in over 50 locations. And a 50,000-square foot reconditioning plant in King of Prussia, Pa. And an inventory of 16,000 unit record parts.

True, we're not likely to upstage those dazzling new computers. But meanwhile people have all that work to get out. They want automatic data processing at reasonable prices. They want good advice, good equipment and good service. And that keeps us pretty busy. It takes a lot of hard work to run a vanishing business.

☐ Please send me your new unit record brochure.
☐ I would like to discuss my data processing needs.

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Michigan State's Telephone Operators Aided With Electronic Locator System

Operator keys a name requested by a caller into a visual display station, resulting in a "page" of information being displayed on the terminal screen.

EAST LANSING, Mich. – A glance at a TV-like computer terminal may supplant the traditional "look in the book" for telephone information operators at Michigan State University.

MSU has implemented an electronic alphabetical locator system for the telephone numbers of some 62,000 students and employees. The numbers and other pertinent data are stored in the memory of an IBM 360 system. Every number is available for instant display on the terminal screen.

Frank Martin, director of data processing for the university, said the computer-based system aims to provide any telephone caller with fast access to persons on campus, as well as to phase out unwieldy paper telephone directories.

Under the system, an operator locates a telephone number by entering the surname of the student in question into the computer through the typewriter-like keyboard of an IBM 2260 visual display station.

Applications

A split-second later, a "page" of information containing 10 alphabetically arranged surnames flashes on the screen. Accompanying each name are telephone and student numbers, local street addresses, and home towns. In case of duplicate names, the operator determines which is the correct student by referring to the other data, beginning with the given name.

In the event the caller knows only the initial letter of the party's last name, the operator keys this in. The computer then begins displaying "pages" of all names starting with the particular letter. The operator may continue this display cycle until she finds the correct student name.

For employees, the terminal display contains office and home telephone numbers, department names, beginning of home addresses, and Social Security numbers.

"The major advantage of the electronic locator is the ease with which files are updated," Martin said. At night, speedy and accurate realignment of data in computer storage eliminates the need for hard-to-manage paper updating.

Martin said the system, installed last fall on an experimental basis, recorded 4,300 inquiries during an alumni weekend celebration in November. In May of this year, he said, a total of 13,470 calls were received and handled.

"There is virtually no limit to the number of inquiries able to be handled by the computerized system," he said. "The operator has the capability of displaying an unlimited number of 'pages' of data, and to page forward or backward from the original display."

Michigan State plans to add a second 2260 late this fall, Martin said, and if further trial proves successful, to continue to expand the operation until a total of eight terminals is in use on the 360/40.

Half-Million Cattle, Sheep, and Hogs Kept in Line with Accounting System

MEXICO, Mo. – A computer is helping Central Missouri Livestock Auction, Inc. ride herd on a half-million cattle, sheep, and hogs auctioned here each year.

Using an IBM 1130 and a newly developed accounting program, Central Missouri keeps track of 40,000 head of livestock sold here each month. This insures each stockman of getting credit for the animals he offered and each buyer of getting the livestock he wanted.

The system trims one-third of the time required for end-of-day buyer and seller settlements, and it keeps records current on Central Missouri's dollar sales.

Central Missouri, marketing agent for more than 3,000 stockmen, was test site for the new automated livestock auction system. Forest Noel, president of the Missouri Livestock Market Center and past president of the National Certified Livestock Markets, said the auction system was developed by the University of Missouri in cooperation with the U.S. Department of Agriculture using the center's IBM 1130 system and marketing experience.

The computer-based livestock accounting system is being made available, through USDA, to other livestock marketing centers.

Conrad Harrison, data processing manager, said that in addition to speeding end-of-day settlements, the system has supported growth that required the addition of a second auction area without additional office personnel.

As consignments of livestock arrive at the holding pens each day, stock handlers record the sellers' names, numbers, and types of livestock to be sold. This information is sent to the computer room for entry into the 1130 via punched cards.

As the livestock is auctioned, buyer's name, weight of the animals (sold in lots of from one to 50), and the purchase price are recorded for addition to information already stored on the computer's magnetic disk file.

When the day's transactions are completed, or a buyer notifies the auction he has made his final purchase, the computer prints an invoice showing livestock purchased, pens where held, gross and average weights, average price paid, total sale price, and any special charges.

Sellers receive a closing report including buyer invoice information, plus commission, holding fee, feeding, veterinarian, or other charges. The computer prints a check for the net sale amount. Payment is made from a special auction fund that is reimbursed by the buyers.

Within minutes of the close of business, buyer and seller settlements are completed. Prior to the computer, settling accounts required spending several minutes with each of up to 200 auction clients on a regular marketing day.

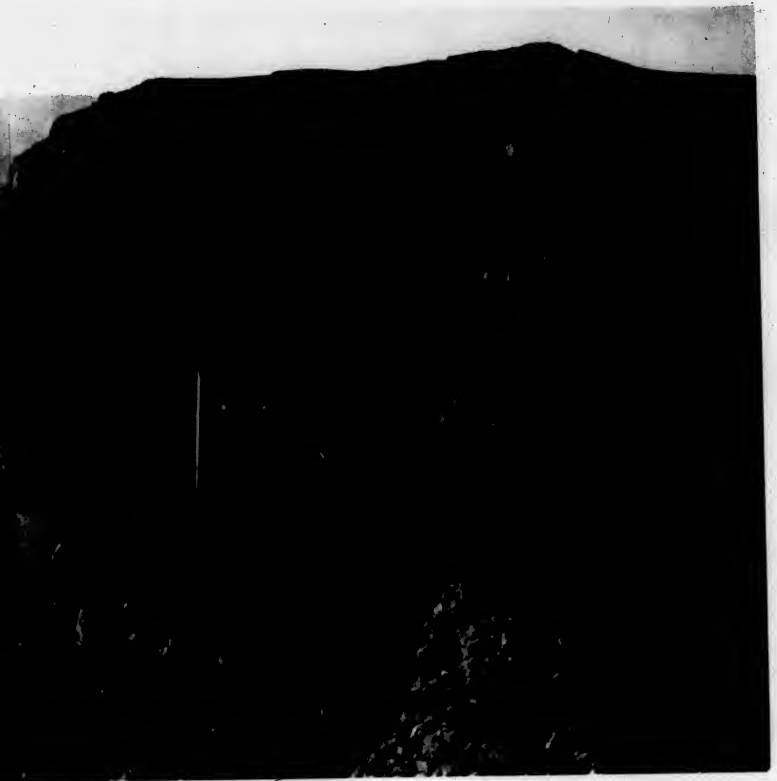
Central Missouri Livestock Auction captures the auction results using its IBM system and an accounting program developed by the University of Missouri.

There is only one Keytape. Honeywell makes it.

Since data preparation came of age there have been a number of keyboard to magnetic tape devices introduced or announced to the industry.

Our unit was one of the first. We called it Keytape.

And we created a full division to make 52 different models. With



unique Honeywell features like smooth vacuum tape drives and electronic keyboards second to none.

We delivered the first of these units over a year ago. And pretty soon Keytape began showing up everywhere.

Now we find that people are using the name Keytape to describe anything that records data onto magnetic tape.

Before things get completely out of hand, we'd like to make one point.

There is only one Keytape. Honeywell makes it.

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Communications and Data Products Division

With a little Bit of luck.

The new Bit 483 mini computer is not lucky. It's a machine with about as much daring as a hammer.

We designed quiet, dull reliability into the soul of our new 483.

And then we started stamping out that soul like cookies. If anything was a gamble, that was. But then, a guy named Ford kind of took the initial risks on mass-production.

He showed that mass-producing something like the 483 would allow us to deliver the 483 yesterday. And that producing in volume would allow us to discount the price.

Putting your money on the 483 means putting your money on a general purpose digital computer with proven design performance and unparalleled problem solving capability.

BYTE orientation. Variable word length.
Cycle stealing data channel. 350 nanosecond memory access time.
Binary and decimal arithmetic. Priority interrupt.
And a complete line of I/O options.

That makes the 483 the cost/performance leader in the mini computer field. And we're making it the best serviced computer in any field.

Frankly, the kind of people who take a chance on the 483 are the kind of devil-may-care people who take a chance on t.v. sets, the horseless carriage and peanut butter in the jar.

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System Controls Building Environment

RICHMOND, Va. – Computers are being used for environmental control in buildings by Robert-shaw Controls Co. The control systems are being installed in larger buildings to control temperature and other environmental conditions, according to the company.

The firm has installed a computer-controlled system in the new headquarters building of the International Monetary Fund in Washington, D.C.

This system determines air-conditioning needs and operates equipment to provide the correct amount of cooling, start and stop ventilating fans, turn lights on and off, and monitor operation of the heating plant. It also keeps track of and analyzes such data as power and fuel consumption and prints out concise daily summaries of facts and figures important to the building's operation.

Features include: computer-programmed operation of refrigeration compressors; computer control of ventilating air drawn in from outside the building, related to the number of people at work inside; computer analysis of operating conditions of mechanical equipment and automatic warning when maintenance is required; automatic shutdown of faulty equipment before damage can result; programming of loads on the four boilers of the building's heating plant; and utilizing the building's lighting system as a heat source. (On cool days the computer decides whether it is more economical to provide heat by turning on lights early, rather than starting up boilers. If so, the computer turns them on).

Westinghouse supplied the computer, a Prodec 50. It is designed for flexibility of application and is built of standard modules that can be assembled in a variety of ways. The IMF computer has a 12K core memory with capability for expansion to 16K.

The IMF computer assimilates information on building operations and produces data in its most usable form.

Consulting engineer Nash M. Love says the installation is the forerunner of a new era in building control which should be widely used within five to ten years. "One computer will act as one thermostat, replacing many, and will perform all control functions in one building or in a complex of buildings," he said.

"The computer will analyze all variables and will operate mechanical equipment at optimum conditions."

"In the building of the future, a computer not only will control lights, heating, and air-conditioning, it also will handle the building's elevators. It will perform bookkeeping, billing, and a large part of the administrative duties."

Love foresees, for example, a complex of apartment buildings with mechanical functions directed by a computer. A tenant would help himself to desired services – heating, cooling, clothes washing and drying – by pushing buttons and turning dials. At the end of the month the computer would calculate each tenant's bill, mail it to him, and record the payment when received.

Or, employees of a large office building could be issued identification cards that could be read by a computer. An employee wanting to enter the building during nonworking hours would insert his card in a slot at the front door. The computer would determine whether that person was authorized to be in the building at that hour and might direct a camera to photograph him, unlock the door, and type out a report of the visit.

Such a security system could include surveillance of restricted areas. A person able to gain unauthorized entance and enter such an area might hear a recorded message: "You are an unauthorized visitor to a restricted area. All outside doors have been automatically locked. The building now is surrounded by security personnel. Please report to the main entrance to explain your mission."

"All this," Love said, "is not a dream. The equipment and the computers already are available. Engineers are making plans for computerized buildings of the future. They may not sound as exotic as manned landings on the moon, but completely automated buildings are in the same time frame as the lunar landing schedule and will have a more direct influence on the bulk of the world's population."

The building control system for the new headquarters building of International Monetary Fund.

Henry "Speed" Register III of
National Computing Industries comments,

"When it comes to languages, WORK TEN is as fast as greased lightning"

"That's because it does all the mechanical work for you. Automatically.

"You don't have to worry about detailed definitions of files and records. You don't have to bother with the mechanics of manipulating printers. You don't worry about the size of print lines, editing, carriage control characters, page breaks.

"You don't manipulate the details. You don't concern yourself with determination of record types, end of file conditions, matching of files together, nor the mechanics of constructing and inserting new records in files.

"You don't even bother with rolling and clearing total levels, nor the determination of control breaks. You don't pay any attention to syntax, missing periods, commas in the wrong place, nor any of dozens of other miserable little details.

"WORK TEN handles all these things perfectly and automatically every time, as it generates COBOL programs, generates standard documentation and prints cross-reference listings to every program affected by every change you choose to make.

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NCI

Six Critical Areas Cited

Computers Prominent in Changed Profile of Education

By Bernard J. Luskin
Special to Computerworld

Rising enrollments in schools, the rise in youth unemployment and underemployment, shortages of needed personnel in all fields of work, the necessity for continuous retraining in all occupational areas, and the need for more and continuing education are accelerating the demand for added opportunities at all levels of education.

This trend, coupled with the rapidly changing educational technology, makes it necessary for educators to re-examine the educational process. Burgeoning educational technology promises to have major impact on the learning environment and the structure and availability of knowledge.

In reading a report of the President's Science Advisory Committee, we find the following statement: "No matter what his specialty, the student must be given the opportunity of using computers in learning and in doing, and the faculty member must be able to use computers in teaching."

Even the skeptics will not deny the fact that the computer has a role to play in the educational process, and that role will become increasingly significant each succeeding year. Orchestrating the capabilities of the computer to the needs of the complicated educational environment at this stage is, however, replete with issues and problems.

Rapid Change

Zinn has noted that the instructional uses of computers have been under investigation for about ten years with rapid change occurring each year. He mentions that the number of projects identifiable in 1961 was about 11. Entelek now documents over 310 programs that are available throughout the United States.

In a junior college survey conducted last fall, sampling development in California junior colleges, I found 15 junior colleges indicating some type of development on campus and another nine of the approximately 90 in the state indicating present plans for use.

Interest in the use of the computer in instruction is growing at a rapid rate. The literature indicates that the Rand Corporation, the University of Michigan, Colgate, and the Orange Coast Junior College District, among many others, are conducting studies that will help to clarify the role of the computer in teaching and learning. Such studies will assist educators in taking steps toward resolving some of the existing problems and issues.

Areas of Importance

The issues related to computer-assisted instruction (CAI) appear to fall into the following categories:

- Pedagogical Considerations. The issues in this area sum to the question of the affect computer-assisted instruction will have on learning. Involved are issues relating to the influence on the role the teacher, structure of the classroom of tomorrow, appropriate teaching-learning strategies, appropriate subject areas that should have priority for development, and the affect of media on learning in relation to traditional methods.
- Hardware Considerations. To this point, educators have, unfortunately, been forced to use devices created for business purposes. They have had to try to adapt these devices for uses in learning. Industry has seemed reticent to become intensely involved in resolving this issue. Questions exist as to what product lines the major industries can develop to assist computer-assisted instruction and what configurations are most appropriate for the use of CAI.

  Certainly, the devices now existing, which have been prepared by industry, are not optimum for use in the educational process. Strides are, however, being made.
- Software Considerations. The instructional programming languages that are appropriate and their capabilities remain a problem. There is no machine-compatible, independent universal language available. However, over 30 instructional programming languages now exist, and improved capability is on the horizon.

  Computer manufacturers, publishers, independent companies, and educational institutions are all becoming involved in CAI development, at this point with some trepidation. Means of obtaining software are crude and, in many instances, with much of the material there is a lack of documentation.
- Personnel Considerations. Education is grappling with the problem of what staff is necessary to support quality development. At the present time, the universities have not met the demand for provision of personnel trained to use educational technology well enough to develop appropriate materials on a broad level. Again, however, there are many in the educational environment working to help resolve these problems.

Serious questions exist about what type of personnel is needed and in what combination.

- Financial Considerations. Certainly, in these inflationary times, funds to support development are difficult to obtain. Encouraging authors with economic incentives is a real problem.

Many comments in the literature relate to whether computer-assisted instruction can be

(Continued on Page 30)

smtwtf's calendar smtwtf's

Oct. 22-23, Grand Rapids, Mich. – A seminar, "The Human Performer in the Computer Related Office," to discuss the integration of machines into office life, given by Herman Miller, Inc. Contact: Joseph Schwartz, Herman Miller, Inc., Zeeland, Mich. 49464.

Oct. 27-30, Anaheim, Calif. – "Joint Conference on Mathematical and Computer Aids to Design," a meeting sponsored by the ACM, IEEE, and the Society for Industrial and Applied Mathematics. Contact: 1969 JCMCAD c/o Siam, 33 S. 17th St., 6th floor, Philadelphia, Pa. 19103.

Oct. 27-31, Los Angeles – Simulation Associates' course on Simscript II, for students with some familiarity with simulation languages. Contact: Simulation Associates, Inc., 1263 Westwood Blvd., Los Angeles, Calif.

Nov. 13-14, Houston – The initial meeting of the NCR Century Systems Users Group. Contact: R.E. Davis, Automated Systems Corp., Houston, Texas 77002.

Nov. 17-19, Minneapolis – "Microfilm Information Systems," a seminar offered by The Institute for Advanced Technology of C-E-I-R Inc. Contact: Registrar, Institute for Advanced Technology, C-E-I-R Inc., 5272 River Road, Washington, D.C. 20016.

CAI Altering Educational Environment

(Continued from Page 29)

come cost effective. It must become cost effective.

The cost of traditionally aided instruction is rapidly rising. The one reducing cost in education is that of hardware. One need look only at what happened to television between 1948 and 1968 to have evidence that research can bring the cost of complicated devices to a reasonable level.

The skeptics should ask themselves if they are similar to those who opined that while the lightbulb was a useful device, it could never be produced economically enough to be used on a mass basis.

● General Considerations. The Office of Education is contributing to the problem by not funding sufficient development of materials. The question of whether consortia can help and whether large networks and programmed libraries are valuable constitute problems that must be resolved.

Steps must be taken to reduce duplication of research and development activities, and the communication gap between practitioners and hardware/software designers must be narrowed. Institutes must be conducted in educational technology and in teacher training, and work must be done to improve copyright laws and rules regulating the use of materials produced, so that both public and private enterprise can contribute to development.

Previously, I have suggested three areas of development.

1. Computer-assisted learning (CAL), direct interface designed to facilitate behavioral change. This activity involves high-level application of the computer to the learning process. At this stage of development, it is the most experimental area. Simulation, gaming, sophisticated problem-solving, and drill and practice are part of this area.

2. Computer-managed instruction (CMI), management of media designed to facilitate behavioral change. Much practical development can take place in this area. Schools have been using media for a long while. Using the computer as a device to direct students through the use of these media may be an important contribution.

At the present stage, appropriate devices have not been developed that can be effectively computer controlled at an easily affordable cost. The computer can, however, manage unappended devices to the interest of student learning.

3. Computer-assisted instruction (CAI), supportive or ancillary, nonadministrative, instructionally related activities. Counseling information and the use of faculty test services, test scoring, and the generation of test questions from data banks are a reality in many areas. This aspect of CAI is developing rapidly.

With the reality of portable terminals; with the quantity of ancillary media being developed and designed to fit the computer; with rising skills on the part of both teachers and technicians in using the computer; and with the number of research studies going on at this time and that will increase in the area of media and computer-assisted instruction, we will find that CAI has a real place in the educational process.

Our concept of the classroom of tomorrow will change. Learning will become more flexible, more individually paced, and hopefully, the role of the teacher will be affected in many instances. We can look to the teacher of tomorrow as an instructional designer, manager of individualized instruction, master of his discipline, and counselor.

Computer Doubles as Teacher, Researcher at Minnesota

By a CW Staff Writer

MINNEAPOLIS – A computer at the University of Minnesota is helping researchers observe and isolate the significant steps in the learning process.

The computer, an IBM 1500 instructional system, is designed for educators experimenting with computer-assisted instruction. It can link up to 32 student stations with the central computer.

Each of the 500 student participants, enrolled in such diverse courses as German, agricultural engineering, and orthopedics, proceeds at his own pace.

Based on his previous responses, the system processes the student's answers and presents the next unit of instruction through display and audio devices.

This makes it possible, via printouts, to see how students reacted to preselected alternatives.

"In a physics experiment, for example, there may be several ways to get the answer, but we assume only one is optimal. We want to find out how a student arrives at the answer, how fast he does, what instructional techniques work best for him, and how he applies what he learns in class and from texts," says Russell Burris, director of the school's center for research in human learning.

The center develops its programs on the instruction system in cooperation with the various other university departments. Researchers determine the course content and prepare programs designed to convey the desired ideas.

"As we better understand the learning process," Burris says, "we hope to improve our instructional designs."

In the past, he notes, researchers lacked the equipment to develop techniques explaining the learning process. They were unable to develop and test experimental programs on a scale large enough to see if their theories were valid.

"Now," he says, "we are attempting to structure the learning environment to fit the individual, monitor his progress, analyze his responses, and alter the course of study accordingly."

"We're not trying to prove that machines make better teachers than people," he said, "we're trying to develop better instructional designs.

"The most important thing the computer has taught us so far – at least some of us are willing to admit this – is the inadequacy of our tools, techniques, and methodologies. We are just beginning to realize our inability to handle the complex behavior we know is out there."

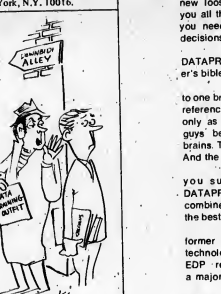
Microfilm Techniques, Advances Featured at New York Conference

NEW YORK – Many facets of microfilm use will be explored at a two-day seminar here Nov. 10 and 11, sponsored by Knowledge Industry Publications.

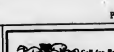
Computer-to-microfilm printing, characteristics of information that deserves microfilm storage, mechanized retrieval systems, financial considerations, and recent technical developments are among the topics to be considered.

Speakers will include Charles Yerkes, David Wolfe, Al Tauber, Gardner Hemple, Richard Houk, Loretta Kiersky, Rod Exelbert, and Mitch Badler.

Additional information is available from Knowledge Industry Publications, 120 E. 34th St., New York, N.Y. 10016.



"Psst, Bub – Wanna Make a Mint?"



Call for Papers

1970 NATIONAL TELEMETERING CONFERENCE, April 27-30, Los Angeles, Calif.

Titled "Telemetry Technology in Transition," the conference is sponsored by two IEEE professional societies – Communications Technology and Aerospace and Electronic Systems.

Telemetry applications to real-time systems, to computer control, and to civil applications will be considered in carrying out the theme. Scheduled programs include 15 to 1 technical sessions, in addition to an all-day tutorial symposium dealing with on-line computers and telemetry.

The call for papers points to seven areas of interest in telemetry's aerospace, biomedicine, oceanography, law enforcement, transportation, business and industry, and advanced telemetry technology.

Abstracts of 300 words should be addressed to program chairman Dr. A.V. Balasubrahman, UCLA Department of Engineering, 405 Hilgard Ave., Los Angeles, Calif. 90024.

New Books

International Computer Bibliography, published by the National Computing Center in cooperation with Studiecentrum voor Administratieve Automatisering, Amsterdam, over 700 pages, $50.00. Order copies from Science Associates/International, Inc., 23 E. 26th St., New York, N.Y. 10010.

The volume includes nearly 6,000 abstracts of books and technical reports on the use, applications, and effects of computers in the scientific, commercial, industrial, and social sectors. The material covers 1960-1968 and includes selections from 39 countries.

Time Sharing Applications Directory (Time-Sharing Enterprises, Inc., 251 W. DeKalb Pike, Suite C-110, King of Prussia, Pa.), over 200 pages, $85; updated six times a year, $125.

The volume features vendor data sheets, listing such information as location, sales offices, computers used, cost of service, and special packages and applications; fold-out charts showing vendors by city, area code, and equipment used; and criteria for rating vendors.

Managing Systems – Part II – Operating the Program, by Leslie H. Matthies (Systemation, Inc., P.O. Box 730, Colorado Springs, Colo. 80901), 109 pages, $4.95.

Systems operations that will help to insure successful program execution are reviewed. Aspects receiving consideration include internal systems, training of systems people, systems support workers, personal effectiveness, human relationships in systems, and common errors in operating a systems program.

Optical Character Recognition And the Years Ahead (The Business Press, 228 Park Ave. West, Elmhurst, Ill. 60126), 400 pages, $15.00.

This anthology includes 41 presentations originally made at an OCR conference sponsored by International Business Forms Industries. It includes 24 case studies, covering applications in manufacturing, retailing, transportation, insurance, publishing, hospital administration, finance, and government. Sections on OCR technology and machines available commercially, as well as pictures, graphs, flowcharts, and statistical tables.

Commercial Time-Sharing Services and Utilities, by Richard T. Bueschel, Andrew G. Stephenson, Douglas C. Whitney (American Management Association, Inc.), 95 pages, $4.85.

This book defines time sharing, gives its history, and lists commercial time-sharing services, with chapters on business applications, selection of appropriate services, and computer utilities and regulation. There is a section devoted to future trends, including such topics as future terminals, applications, and the growth of special-purpose time-sharing systems. There is an appendix defining time-sharing hardware and software and some sample business applications, as well as a glossary.

Effective Program Development: The Choices, edited by William C. McGee (Data Processing Digest, Inc.), 171 pages.

The book deals with the multiplicity of tasks to be accomplished with general-purpose and special-purpose computers and the tools and techniques that have been developed to make programming cheaper, faster, and easier. It explains such terms as "packaged program" and "contract programming" and the role of the generalized program. Topics include program logic and on-line vs. off-line programming.

Introduction to Fortran II and Fortran IV Programming, by D.F. Carver (John Wiley and Sons, Inc.), 224 pages, $8.95.

This volume was aimed at the needs of college students at the freshman or sophomore level. It discusses the art of programming and the use of processor programs with special attention to assemblers and compilers. Flowcharting and the problem of program documentation are included, with emphasis on the "ground rules" of Fortran, together with several sample problems.

Introduction to Programming, prepared by The Software Writing Group, Programming Dept., Digital Equipment Corp., $2.

A training text and reference handbook, as well as a basic programming reference source for users of small computers. It is an introduction to programming digital computers that can be used by students, programming trainees, and experienced programmers. The book offers an introductory text to machine-language programming and is concerned primarily with Digital Equipment Corp.'s PDP-8 family of computers. It offers two approaches to learning computer programming: learning to program in machine language and learning to program in a common programming language that uses many English words and standard mathematical notation.

Automatic Data Processing, by Frederick P. Brooks Jr. and Kenneth E. Iverson (John Wiley and Sons, Inc.), 466 pages, $14.50.

This book covers the fundamental aspects of data processing and is designed for college upperclassmen and graduate students, as well as for self-study. Chapters are devoted to manual data processing equipment, punch-card equipment, computer coding, computer organization, programming, programming systems, and system design.

Computer Industry Guide (G & W Resource Publications Inc.), 78 pages, $6.95.

This is a reference book for those working in the computer field. It features a software industry report (an analysis of the computer industry); a computer services section (profiles of firms offering computer services); a software products section (profiles of firms that own computer software products); and computer career opportunities.

Text of Internal Revenue Service Software Tax Ruling

The Internal Revenue Service has announced that companies may treat the costs of software development as either current expenses or capital expenditures [CW, Oct. 15]. Below is the full text of the related Revenue Procedure which will appear in Internal Revenue Bulletin No. 1969 – 43, dated Oct. 27.

PART V

ADMINISTRATIVE, PROCEDURAL, AND MISCELLANEOUS MATTERS

(Also Part 1, Section 162; 1.162-4, 1.162-11)

Rev. Proc. 69-21

SECTION 1. PURPOSE.

The purpose of this Revenue Procedure is to provide guidelines to be used in connection with the examination of Federal income tax returns involving the costs of computer software.

SECTION 2. BACKGROUND.

For the purpose of this Revenue Procedure, "computer software" includes all programs or routines used to cause a computer to perform a desired task or set of tasks, and the documentation required to describe and maintain those programs. Computer programs of all classes, for example, operating systems, executive systems, monitors, compilers and translators, assembly routines, and utility programs as well as application programs are included. "Computer software" does not include procedures which are external to computer operations, such as instructions to transcription operators and external control procedures.

SECTION 3. COSTS OF DEVELOPING SOFTWARE.

.01 The costs of developing software (whether or not the particular software is patented or copyrighted) in many respects so closely resemble the kind of research and experimental expenditures that fall within the purview of Section 174 of the Internal Revenue Code of 1954 as to warrant accounting treatment similar to that accorded such costs under that section. Accordingly, the Internal Revenue Service will not disturb a taxpayer's treatment of costs incurred in developing software, either for his own use or to be held by him for sale or lease to others, where:

1. All of the costs properly attributable to the development of software by the taxpayer are consistently treated as current expenses and deducted in full accordance with rules similar to those applicable under Section 174 (a) of the Code; or

2. All of the costs properly attributable to the development of software by the taxpayer are consistently treated as capital expenditures that are recoverable through deductions for ratable amortization, in accordance with rules similar to those provided by Section 174 (b) of the Code and the regulations thereunder, over a period of five years from the date of completion of such development or over a shorter period where such costs are attributable to the development of software that the taxpayer clearly establishes has a useful life of less than five years.

SECTION 4. COSTS OF PURCHASED SOFTWARE.

.01 With respect to costs of purchased software, the Service will not disturb the taxpayer's treatment of such costs if the following practices are consistently followed:

1. Where such costs are included, without being separately stated, in the cost of the hardware (computer) and such costs are treated as a part of the cost of the hardware that is capitalized and depreciated; or

2. Where such costs are separately stated, and the software is treated by the taxpayer as an intangible asset the cost of which is to be recovered by amortization deductions ratably over a period of five years or such shorter period as can be established by the taxpayer as appropriate in any particular case if the useful life of the software in his hands will be less than five years.

SECTION 5. LEASED SOFTWARE.

Where a taxpayer leases software for use in his trade or business, the Service will not disturb a deduction allowable under the provisions of Section 1.162-11 of the Income Tax Regulations, for rental.

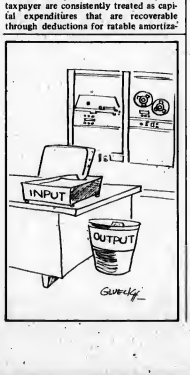
SECTION 6. APPLICATION

.01 The costs of development of software in accordance with the above procedures will be treated as a method of accounting. Any change in the treatment of such costs is a change in method of accounting subject to the provisions of Section 446 and 481 of the Code and the regulations thereunder.

.02 For taxable years ending after October 27, 1969, the date of publication of this Revenue Procedure, the Service will not disturb the taxpayer's treatment of software costs that are handled in accordance with the practices described in this Revenue Procedure.

.03 For taxable years ending prior to the date of publication of this Revenue Procedure, the Service will not disturb the taxpayer's treatment of software costs except to the extent that such treatment is markedly inconsistent with the practices described in this Revenue Procedure.

For the purpose of applying the preceding sentence, the absence of any formal election similar to that required by Section 174 of the Code, or the amortization of capitalized software costs over a period other than the five-year period specified in Section 174 (b) of the Code, will not characterize the taxpayer's treatment of such costs as markedly inconsistent with the principles of the Revenue Procedure.



CW FINANCIAL ON THE LIGHTER SIDE

"Well, Sure We're After the Business . . . But Ask Yourself, 'Is This In Keeping With Our Image?'"

"Terrific, Eh? . . .We Got Him to Agree to Build Us 8 Million Components in the Next Six Months!"

"I'm Still Making the Decisions Here, Smarty Pus!"

TIME-SHARING

APPLICATIONS DIRECTORY

INCLUDES

- *INDEX OF APPLICATIONS BY INDUSTRY*
  A ready reference to find out how your industry counterparts are using remote access (time-sharing) systems
- *APPLICATION ABSTRACTS*
  Alphabetical listing of applications – Description – Computer – Vendor – Language – Price – Selling Party
- *VENDOR CROSS REFERENCE*
  Applications listed by vendor – shows vendor activity in a given application area – which vendors concentrate on applications.
- *COMPUTER CROSS REFERENCE*
  Applications listed by computer – shows applications suited to a particular computer – who is doing what on which computer
- *LANGUAGE CROSS REFERENCE*
  Applications listed by language – shows languages used for particular application areas
- *APPLICATIONS WANTED*
  Applications not known to be available for valuable information for vendors, use and software houses
- *VENDORS*
  Complete listing of all time-sharing, remote batch and remote access vendors address, president/manager, phone number
- *ADVERTISING – Services and Products*
  Section dedicated to those interested in advertising to the remote access (time sharing/remote batch/special systems) industry. Contact us for RATE CARD.

INDUSTRY DIRECTORY

INCLUDES

- *VENDOR DATA SHEETS*
  Vendor name – address – president – map of U.S. locations – sales offices – computers used – relative computer size and capability – terminals – languages – detailed cost of service – time – sharing or remote batch – calculation or business oriented – number of simultaneous users – communication lines available – core size – disc size and speeds – drum size and speeds – special features – special packages/applications – portable terminal rental or sales – front end computer
- *FOLD-OUT CHARTS OF VENDORS BY CITIES*
  Fingertip reference showing cities where vendors offer their services – geographical concentration of vendor service – phone line capabilities...
- *FOLD-OUT CHARTS OF VENDORS BY AREA CODES*
  How phone charges can be reduced by use of local lines...
- *VENDORS BY TYPE OF COMPUTER*
  Time-sharing and remote batch equipment used...
- *VENDORS BY LANGUAGE*
- *GLOSSARY*
- *TIME-SHARING VENDOR SELECTION*
  Points to consider for both potential and experienced time-sharing vendors – how to rate a vendor – vendor rating forms – negotiating for a trial period – what to look for AFTER you have selected a vendor...

Please mail to me the TIME-SHARING APPLICATIONS DIRECTORY under the following plan:
One year subscription, published quarterly.

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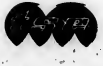


TIME-SHARING ENTERPRISES, INC.

251 West DeKalb Pike
King of Prussia, Penna. 19406
(215) 265-7610

Earnings Reports

DATA-DESIGN LABORATORIES
Year Ended June 30

	1969	a1968
Shr Ernd	$.33	$.28
Revenue	5,519,523	5,282,229
Earnings	316,930	283,358

a-Restated to reflect acquisitions on a pooling-of-interests basis.

RAYMOND ENGINEERING INC.
Six Months Ended June 30

	1969	1968
Shr Ernd	$.64	$.40
Revenue	6,142,000	6,918,000
Earnings	351,000	211,000

INDUSTRIAL NUCLEONICS CORP.
Year Ended April 30.

	1969	1968
Shr Ernd	$.58	$.46
Revenue	18,056,673	16,287,053
Earnings	1,775,823	1,317,844

BRANDON APPLIED SYSTEMS INC.
Three Months Ended May 31

	1969	a1968
Shr Ernd (Loss)	$.04	($.05)
Revenue	1,079,302	468,398
Earnings (Loss)	36,603	(42,148)

a-Includes operations of companies acquired on Aug. 31, 1968, on a pooling-of-interests basis. All figures are unaudited.

ELECTRONIC COMPUTER PROGRAMMING INSTITUTE INC.
Six Months Ended June 30

	1969	1968
aShr Ernd	$.06	b$.18
Revenue	1,443,322	1,529,649
Earnings	95,793	298,745

a-Based on 767,065 shares currently outstanding; b-Excluding an extraordinary item, net of taxes, of $107,173, equal to 14 cents per share.

DATA AUTOMATION CO. INC.
Six Months Ended July 31

	1969	1968
Shr Ernd	$.22	$.09
Revenue	3,264,847	1,209,992
Earnings	290,188	104,538

ANALYSTS INTERNATIONAL CORP.
Year Ended June 30

	1969	1968
Shr Ernd	$1.54	$.42
Revenue	1,615,000	1,233,000
Earnings	120,236	79,158

COMPUTER INSTALLATIONS CORP.
Six Months Ended June 30

	1969	a1968
Shr Ernd	$.42	$.30
Revenue	650,731	509,699
Earnings	328,529	149,892

a-1968 figures represent the operations of a predecessor proprietorship, adjusted to put them on a corporate basis.

COLLINS RADIO COMPANY AND SUBSIDIARIES
Year Ended August 1

	1969	1968
aShr Ernd	$2.81	$3.99
Revenue	400,233,000	447,026,000
Earnings	8,932,000	13,014,000

a-At Aug. 1, 1969, company sponsored new product design amounted to $10,428,000 net of amortization and customer-sponsored effort on equipment for new generation airframes totaled $2,528,000. Company-sponsored expenditures include $5,470,000 of deferred research and development relating to new product design that was previously expensed as incurred. With this change in accounting practice, net income and net income per share for the year ended Aug. 1, 1969, have been increased $2,582,000 and 87 cents per share, respectively.

Acquisitions

Thomas & Betts Corp., Elizabeth, N.J., has announced the consolidation of their operations with ACI Inc., another wholly owned subsidiary. Together with previous acquisitions, Digital Sensors, Inc. and the Arthur Ansley Mfg. Co., ACI and Thomas & Betts will be collectively known as Ansley Division of Thomas & Betts Corp. The consolidation enables the new company to have engineering and manufacturing facilities on the east and west coasts.

KMS Industries, Inc., Ann Arbor, Mich., a science-based company with primary interests in advanced electronics and systems, industrial technology, education systems, and leisure-time activities, has reached an agreement to acquire a major interest in **Natam Systems and Operations Research, Ltd. of Israel.** Natam, one of the largest computer software companies in Israel, serves customers in that country by developing business, industrial, and educational computer systems in the area of automated typesetting, telephone operations, and university studies, particularly in the fields of health and medicine.

Varian Associates of Palo Alto, Calif., manufacturers of microwave and power tubes, scientific analytical instruments, and other electronic products, and Electronic Associates, Inc. of West Long Branch, N.J., have jointly announced a preliminary agreement for the acquisition of the assets and business of Electronic Associates, Inc. for stock of Varian Associates. EAI manufactures general-purpose, electronic analog, analog/hybrid, digital computing and electronic systems, and precision electronic plotting equipment.

URS Systems Corp. of San Mateo, Calif., has signed an agreement to acquire **Madigan-Hyland, Inc.** (including Praeger-Kavanagh-Waterbury) of New York for a down payment in URS stock worth approximately $7,000,000, with additional URS stock to be issued depending upon the earnings of Madigan-Hyland for 1970. Madigan-Hyland is a design firm with capabilities in engineering, architecture, planning, and landscape architecture.

Marcom, Inc. of New York, a management and business planning consulting company specializing in advanced technology industries, has signed a letter of intent for the acquisition of **Indeur S.A.**, headquartered in Geneva, Switzerland, and its Institute for Information Services for a combination of Marcom stock and cash. Indeur develops computer software and provides systems development services for banks, hospitals, governments, industrial firms, and other organizations with emphasis on data processing and manufacturing control. Its subsidiary, the European Institute for Information Services, offers seminar programs in the use of computer-based information systems.

California Data Systems Corp. of Hopkins, Minn., has announced the acquisition of **Interscan, Inc.** of Oklahoma City, Okla. Cal Data produces a line of equipment for the production and testing of magnetic disks for the computer industry. Interscan was formed earlier in the year to market a line of disk pack testers. Terms of the merger were not disclosed. Concurrent with the merger, Cal Data has moved its offices to Oklahoma City.

American Biomedical Corp. of Dallas has agreed in principle to acquire **Data Tabulating Corp.** of Springfield, Mo., from Clarkland, Inc., a wholly owned subsidiary of the St. Louis-San Francisco Railway Co., in a cash transaction. American Biomedical performs medical, agricultural, and food and drug testing in its eight-state network of 22 laboratories and also manufactures nuclear products for medical diagnosis. Data Tabulating, a computer services firm, will become the central midwestern branch of Management Systems Corp., a Dallas-based subsidiary of American Biomedical.

Computer U-Haul

SOUTHBORO, Mass. – Data General Corp. delivered its 100th Nova computer recently.

Actually, the 100th computer wasn't deliverad at all. It was picked up.

Homer Carney, president of Business Information Systems, Inc., drove his station wagon right up to the loading dock at Data General and collected a basic Nova computer, which sells for $7,950 and includes 4096 words of 16-bit core memory and Teletype interface.

Paine, Webber Start OTC Computer Market Making

NEW YORK – Computerized trading in stocks – long viewed by many as the future for securities markets – has become a reality at Paine, Webber, Jackson & Curtis.

The investment firm is now making markets via computer in over 80 OTC securities in which the firm deals as a principal.

The system is called Computrade.

Thompson conceived the system and worked on its implementation over the past year and a half with Robert Bell, the firm's specialist in computerized communications technology. Technical assistance on the project was provided by Control Data Corporation under the direction of Jon Millen.

"Computrade enables a Paine, Webber stockbroker anywhere in the nation to execute market orders instantaneously in stocks which we position," Thompson said.

"The computer automatically and instantaneously sends out a report confirming the execution," Computrade eventually will be expanded to service some 300 major OTC issues, Thompson added.

This is how Computrade works:

A broker in the firm's Minneapolis office asks for a quote on any of the issues traded by the computer via the firm's private Teletype system.

In this case the security is Friendly Ice Cream, which has the Paine, Webber wire code designation OCFI.

The computer would respond instantaneously:

MARKET:	40 3/4 – 41 1/4
SIZE: 9	300 x 500.

This message informs the broker that a client may sell up to 300 shares at 40 3/4 and buy up to 500 shares at 41 1/4 instantly.

Should the stockbroker wish to purchase 100 OCFI at the offering price of 41 1/4, he would wire: Buy 100 OCFI 41 1/4 (or MKT, indicating at the market), with the client's account number.

The computer will instantly report:

BOT 100 OCFI 41 1/4
ACCOUNT NUMBER LO-12345-1

In the example cited, if another broker has bought the 500 shares available at the offer price of 41 1/4, the computer automatically provides a new quote, such as bid 41, offer 41 1/2, along with the size of the bid and offer.

Orders entered at the previous bid and offer are rejected by the computer and diverted to the appropriate trading desk for manual processing.

Thompson explained that the bid and offer as well as the size are determined by the firm's OTC traders via Teletype.

At present it is necessary for the firm's OTC traders to enter the markets into the computer via a Teletype machine. Within the next few months this method will be replaced by high speed CRT units. These resemble television sets with a keyboard attached.

Traders will enter the market information into the computer via the keyboards and all activity in the issues will be displayed on the screens as it occurs.

The computer employed in the Computrade system is a Control Data 8090, one of Paine, Webber's communications computers.

IBM's Income Up 7.9%, Earnings Up 10%; Rate of Increase Down

ARMONK, New York – For the nine months ended Sept. 30, 1969, worldwide consolidated net earnings of International Business Machines Corporation were $684,691,355 after taxes, Thomas J. Watson, Jr., chairman of the board, reported last week.

In his letter to stockholders, Watson said, "During the first nine months of this year, gross income increased 7.9% and net earnings increased 10.3% over the first nine months of last year.

"These increases are smaller than those reported for the first six months of this year and reflect a continuation of the previously reported decline in the proportion of gross income derived from outright sales of data-processing equipment."

Earnings per share were $6.04 on the 113,425,557 shares outstanding.

This compares with net earnings after taxes for the corresponding 1968 period, of $620,695,073, equivalent to $5.50 per share on the 112,754,514 shares obtstanding Sept. 30, 1968.

Net earnings before taxes amounted to $1,452,191,355 compared with $1,326,695,073 in the corresponding period of 1968.

Consolidated gross income for the nine months ended Sept. 30, 1969 amounted to $5,294,777,179 compared with $4,908,971,604 in the corresponding 1968 period.

Redcor Reports Increased Sales, Earnings for Year

CANOGA PARK, Calif. – Redcor Corp., has announced sales for the year ending June 29, 1969, of $7,692,000 and earnings of $185,000 versus $6,969,000 and $65,000, respectively, for fiscal 1968.

Earnings per share (based on common and common equivalents) were 37 cents for fiscal 1969, up from 18 cents in the prior year, restated. An extraordinary item of $37,000, equal to 7 cents per share, is included in the 1969 earnings.

In announcing year-end results, Emil R. Borgers, president, stated that substantial progress has taken place in making Redcor a significant factor in the computer industry.

The company's marketing, engineering, and management capabilities have been strengthened and continued progress is anticipated.

According to Borgers, Redcor will commence reporting to shareholders on a quarterly basis in an effort to provide expanded information on company progress.

Due to the seasonal nature of Redcor's business, quarterly statements may not reflect a consistent pattern, he said.

Loss Set in First Quarter

While backlog and prospects indicate a year of significantly higher sales and earnings, the first quarter will not be profitable. The primary reason is a shift in the company's business from short-delivery-cycle instruments to larger long lead-time, computer-based systems.

Computer Software Users Banks Seen as 'Extensive'

NEWTON, Mass. – Banks, the most extensive users of on-line services, employ 20% of all programmers and systems analysts and use almost 40% of all purchased proprietary software packages, according to the results of a six-month study recently completed by International Data Corp.

Averaging eight programmers and 3.4 systems analysts per computer installation site, the banking industry has become a significant competitor to traditional computer service firms, the report indicates.

More than $149,000 per site will be spent in 1969 to develop software packages.

Banks most frequently use savings, demand deposit, installation loan, mortgage loan, and payroll packages, the survey says.

Today's total annual expenditures for software by users in the U.S. are estimated at $2.3 billion, according to Patrick J. McGovern, IDC president, who said more than 85% of current outlays are for in-house software development.

"The ratio of in-house to outside software purchases will change over the next few years in favor of outside purchases," McGovern predicted.

Exclusive of the effects of separate hardware and software pricing by manufacturers, nearly $1 billion will be available for outside software purchases by 1973, he said.

In the future, computer users expect to allocate 25% of their total budget for purchased software for systems software, 18% for utility routines, and 57% for applications packages.

SCC Loses $1.6 Million, Has Big Backlog

DALLAS – Scientific Control Corp. reported in its fiscal 1969 annual report that although the company showed a loss last fiscal year sales have surged ahead early in 1970 and created a more than $21 million backlog.

Patrick S. Martin, chairman of the five-year-old Dallas company, said, "During 1969, Scientific Control lost about $1.6 million on sales of approximately $6.9 million.

"Substantial factors in the loss were the $1.3 million SCC spent on product development and the $1.2 million expended on organizing and staffing a national marketing team.

"And this $2.5 million was written off as a current expense, not capitalized as is often the case in the computer industry," he said.

SCC believes, Martin pounted out, that fiscal 1970 will show considerable improvement. This, he said, is based upon these facts:

- On Sept. 29, Scientific Control announced it had reached an agreement in principle with Commercial Credit Business Loans, Inc., a subsidiary of Control Data Corp., for a $4.5 million loan. As part of the agreement, the company will grant Commercial Credit a license to manufacture and market the DCT-132 remote data communications terminal – an SCC-developed product. The DCT-132 grant agreement would be for an undisclosed but "very substantial amount of money," and would not restrict Scientific Control from continuing to manufacture and market the DCT-132.
- The company during the past year has made two acquisitions – one a company that makes SCC's computer cabinets and frames and the other a manufacturer of sophisticated circuit boards. Scientific Control also announced in August an agreement to acquire Graham Magnetics Inc., a Graham, Texas, manufacturer of high-quality magnetic tapes for the computer and data processing industries.
- The company, headquartered in the Dallas suburb of Carrollton, is continuing development of its national marketing network that now has 17 field sales and service offices in strategic cities from coast to coast.
- SCC has begun construction of an 80,000-sq-ft addition to its year-old headquarters, and the number of employees at the corporation has grown from 285 at the end of fiscal 1968 to more than 830 at the end of fiscal 1969.

Four Standard & Poor Executives Break Away to Form Service Firm

NEW YORK – Telstat Systems, Inc., a computerized research and analytical service for financial and business institutions, has been formed by former executives of Standard & Poor's Corp.

Miss Penny Kanicldes is president of the new organization, Alan Feuerstein, William J. Stern, and Richard Griese are vice-presidents.

Laurence Abrams, a founder and vice-president of Clinton Oil Co., will be chairman of the financial and executive committees of Telstat.

The new company will be headquartered at 1250 Broadway.

Telstat says it is a computer information utility company that produces and sells financial and economic data in computer readable form. It is also engaged in the development of application software for the analysis and presentation of information to the customer.

New Companies

The company says it is developing an application language, Assist, (a simple statistical investment selection tool) to give a financial analyst access to Telstat's data bases from remote terminals in a time-shared mode.

Assist is written so the analyst can use his own terminology and conduct a dialogue with the Telstat computer and its financial data banks from his own terminal.

Telstat will also enter the field of money management through a wholly owned subsidiary, Telstat Investment Management Company.

Miss Kanicldes, a graduate of Skidmore College, is said to have founded Standard & Poor's computer division and was that company's only woman vice-president. She pioneered S&P's entry into on-line information systems and was responsible for the implementation and production of S&P'S computer-based products and internal data processing activity.

Feuerstein was vice-president of Standard Statistics Co., a subsidiary of S&P, in charge of computerized financial research.

Griese was manager of S&P'S on-line software development, responsible for design and development of remote terminal oriented languages for on-line data delivery.

Stern was director of on-line information systems at S&P where he was responsible for the business planning, marketing, and technical development of its time-shared financial information services.

Other New Companies

☐ A Cleveland-based company, Trundle Computer Sciences, will offer clients a combination of high-level management consulting skills plus computer system design and programming skills aimed at developing more practical solutions to management problems.

☐ Cybermation Inc. plans to serve as management and engineering consultants to the computer and allied industries. The new firm has established its corporate headquarters at River Road, Washington Crossing, Pa.

It has immediate plans to serve the Middle Atlantic region, but expects to expand into national operation by early 1970. The company was founded by Ric Rohrer, who serves as its president and chief executive officer.

☐ Delta Computer Corp., a computer service firm, has been organized in Dallas with executive offices in the 211 N. Ervay Bldg.

The new company says it offers a broad range of computer services, with an emphasis on systems and programs for insurance and finance companies, convenience stores, and municipalities.

According to R.O. Rush, president and chairman, the company is completing plans to establish service centers, equipped with computers and a staff of systems analysts, in Mississippi and Louisiana.

☐ The establishment of a new company offering an "APL Plus" time-sharing service has been announced by Daniel Dyer, president of the firm, Scientific Time Sharing Corp., Washington, D.C.

Scientific Time Sharing has established an office in Philadelphia and says it will open others in New York and Boston.

Some 230 application programs already exist in APL Plus for handling engineering and scientific calculations, operations research, accounting, information retrieval, and management information systems.

☐ Information and Communication Applications, Inc., a computer systems consulting firm headquartered in Silver Spring, Md., and Network Analysis Corp., specialists in network analysis and operations research, Glen Cove, N.Y., have formed a subsidiary company, Analytic Planning Inc., that will apply analytical capabilities to large-scale network problems in such diverse fields as communications, law enforcement, oil, gas, ground transportation, and airline traffic.

Robert A. Mallet will head APL, located in Suite 804, 8121 Georgia Ave., Silver Spring, Md.

☐ Talcott National Corp., parent holding company of James Talcott, Inc. and The Evening Star Newspaper Co., publisher of *The Washington Star*, have formed a new joint venture to develop and market computer systems and programs.

The new company, to be called Tal-Star Computer Systems, Inc., has been organized to provide a broad range of computer-oriented services to the newspaper, television, and radio industries. Among the services offered will be computer systems and programming, consulting, installation management, and time-sharing services.

☐ Computer Audit Systems, Inc. will specialize in varied services for the auditing profession, developing training programs in EDP auditing, creating software audit programs, and instruction/consulting services on computer security and protection. The firm, located at 725 Park Ave., East Orange, N.J., was formed by Joseph J. Wasserman.

CW FINANCIAL ON THE LIGHTER SIDE

"Like the Big Computer Makers – We'd Rather Rent Than Sell!"

"Don't Knock It Man – I've Already Had Some Feelers From Some Big Systems Conglomorates!"

"Look, the Heck With the Old Persuasive Techniques – Either They Buy Or We Kick Scratch And Bite, Right?"

"Well, How Am I Going to Do This Week?"

New Registrations

AUTO-GRAPHICS, INC., 751 Monterey Pass Road, Monterey Park, Calif. 91754, a company that is engaged in the technology of image generation of both text and graphics by means of computer hardware and software systems for photocomposition, filed to register 210,000 shares of common stock. Proceeds, at $7.50 per share maximum, intended to reduce short-term bank loans, to repay short-term notes, to hire additional personnel, to expend its System 24, to complete the conversion of its Schematic Diagram Display Systems to third-generation computer equipment, and for advertising and promotion. The underwriter is Bateman Eichler, Hill Richards, Inc., 460 S. Spring St., Los Angeles, Calif. 90013.

COBURN CORPORATION OF AMERICA, 100 Merrick Road, Rockville Centre, N.Y., a company that is primarily engaged in the business of consumer finance and leasing and also in computer services, filed to register 76,625 shares of common stock. The price is $15 per share maximum. The underwriter is Watson & Co., Inc., 74 Wall St., New York N.Y.

CONVERSATIONAL COMPUTING, INC., 10465 Melody Drive, Denver, Colo. 80234, a company that proposes to establish and operate a school offering programming for time-sharing computer systems, filed to register 300,000 shares of common stock. Proceeds, at $1 per share maximum, intended to purchase electronic audio-visual equipment and recordings for course instructions. The underwriter is Kureen & Company, Inc., 26 Broadway, New York, N.Y. 10004.

MASTER CONTROL, INC., 200 National Bankers Life Building, Dallas, Texas 75201, a company that provides data processing services, software services, and other professional services related to the use of computer equipment to insurance companies, filed to register 376,376 shares of common stock. These shares are to be distributed by National Bankers Life Insurance Co., the parent company, to its shareholders at the rate of two Master Control shares for each NBL share. The remaining 170,000 shares are reserved for issuance in connection with stock options granted, or to be granted, by the company.

RC 95, INC., 7 Westchester Plaza, Elmsford, N.Y. 10523, a company that designs, manufactures, and sells electronic modules used to convert and process information, filed to register 300,000 shares of common stock. Proceeds, at $10 per share, intended for repayment of bank loans for marketing expenses, and for tooling, machinery, equipment, engineering, and a sales program in connection with their proposed real time digital plotter and pressure to digital converter. The underwriter is S.B. Cantor Co., 79 Wall St., New York, N.Y.

SYSTEMS ENGINEERING LABORATORIES, INC., 6901 W. Sunrise Blvd., Fort Lauderdale, Fla. 33310, a company that manufactures and sells medium-size, high-speed digital computers with peripheral equipment, filed to register 250,000 shares of common stock. Proceeds, at $40.75 per share maximum, intended for expansion of its leasing program, construction of a new plant, and additional working capital. The underwriters are Lehman Brothers, 1 William St. and C.E. Unterberg, Towbin Co., 61 Broadway, both of New York, N.Y.

JOHN O. KETTELLE CORP., 1701 N. Fort Meyer Drive, Arlington, Va. 22209, a service organization engaged in solving its customers' problems through the application of the "systems approach" and related techniques, filed to register 240,000 shares of common stock. Proceeds, at $13 per share maximum, intended for anticipated increases in accounts receivable and work in process, development of proprietary systems for subsidiaries, purchase of computer equipment for lease, opening one or more new processing centers, exploration and initial development unsecured indebtedness, working capital, and general corporate purposes. The underwriter is Munger, Baker & Currie, Inc., 345 Park Ave., New York, N.Y.

COLUMBIA COMPUTER CORP., 8408 Arlington Blvd., Fairfax, Va. 22030, a company engaged in providing computer systems analysis, computer programming services, and computer consulting services, filed to register 100,000 shares of common stock. Proceeds, at $7.50 per share, intended for opening and maintaining two new offices in Baltimore and Detroit, establishing a department specializing in real-time techniques useful for connecting and utilizing remotely located computers, for purchasing computer time, and for working capital. The underwriter is Amos Treat Associates, Inc., 79 Wall St., New York, N.Y.

ALLIED DATA PROCESSING, INC., 275 Madison Ave., New York, N.Y. 10016, a company that provides data processing services, including systems design and programming, computer processing, computer time sales, and data preparation, filed to register 300,000 shares of common stock. Proceeds, at $8 per share maximum, intended to establish and staff additional service bureaus; to pay a note held by the selling stockholder; to alter, equip, and furnish combined executive and production headquartals; to develop, implement, and/or purchase new programs and systems; to hire additional personnel; to provide working capital; and to further general corporate purposes. The underwriter is Powell, Kistler & Co., 110 Old St., Fayetteville, N.C. 28302.

This announcement is neither an offer to sell nor a solicitation of an offer to buy any of these securities. This offering is made only by the Prospectus.

NEW ISSUE October 7, 1969

450,000 SHARES

COMPUTER LEARNING AND SYSTEMS CORPORATION

Common Stock

(Par Value $0.01)

Price $8.00 Per Share

Copies of the Prospectus may be obtained from the undersigned only in the States in which such Underwriter is qualified to act as a dealer in securities or in which the Prospectus may legally be distributed.

FIRST INVESTMENT PLANNING COMPANY

1500 Massachusetts Ave., N.W., Washington, D.C. 20005

Contracts

Astrodata, Inc., Anaheim, Calif., has received a $500,000 contract from the General Electric Co.'s re-entry and environmental systems division, Philadelphia, for the delivery of two Astrodata Comcor 550 analog computers and a C-510 Intracom interface unit. The analog computers will be linked to a GE 635 digital computer by the Astrodata C-510 Intracom unit for operation as a hybrid simulation system, supporting GE's research activities on urban systems, oceanography, and space vehicles.

Control Data Corp., Minneapolis, has been awarded two contracts for CDC Medlab systems using CDC 3300s at George Washington University, Washington, D.C., and Massachusetts General Hospital, Boston. The systems will automate patient information and physiological monitoring and analysis.

Gotham Hotels, Ltd., New York, has contracted with International Reservations Corp. for 8,500 rooms in IRC's nationwide reservations service for hotels, motor-hotels, auto rentals, airlines, corporations, and travel agents. Gotham has properties in downtown metropolitan areas and at resort locations featuring convention facilities.

Informatics Inc. has received a $338,000 contract extension from the Jet Propulsion Laboratory, Pasadena, Calif., to continue software support for the space program.

Computer Technology Inc. has been selected to assist the City of Jacksonville, Fla., in seeking a $3-million data processing grant from the U.S. Department of Housing and Urban Development. Jacksonville would use the funds to develop a comprehensive municipal information system covering all aspects of the city's management.

John Hancock Mutual Life Insurance Co. has elected to use the mortgage banking system of American Automated Services, Inc., a division of American National Bank of Jacksonville, to convert the mortgage loan records in its Statesboro, Ga., office.

IBM Selects Architects For High Rise Offices

ARMONK, N.Y. – IBM has retained the architectural firm of I.M. Pei & Partners, New York, to design a high-rise office building in Manhattan.

The building will be on IBM property on Madison Ave. between 56th and 57th Sts.

The new structure will replace the existing IBM building at 590 Madison Ave. and several smaller buildings at that location. IBM said demolition of existing buildings will be undertaken during 1970.

The new building will be occupied by IBM employees now in existing sales and service offices and other company facilities in New York, although no final determination has been made as to which offices will be relocated.

Expansions

Digicon Establishes Computer Systems Division

HOUSTON – Digicon, Inc., a geophysical company, is extending the scope of its operations by establishing a computer systems division that will offer small- and medium-scaled computer systems – including equipment and programs – for seismic and other geophysical data processing.

The move into the marketing of a computer hardware/software system dovetails with Digicon's activities in the geophysical industry and has developed from the company's experience in the design and application of computer techniques in seismic data processing.

Digicon is engaged in the collection of geophysical and seismic data by both marine and land surveys and in the processing of this data by computer, utilizing both standard and proprietary software programs. The company further provides geophysical consulting and interpretative services.

A company spokesman views his division's market as those firms, both here, and abroad, who have a need for continuous geophysical data processing service. Digicon will design the systems, supplying programs and specialized hardware peripherals. Techniques will be utilized that have been developed by the company for high production yield in the area of seismic processing.

Belgian Subsidiary Formed By Electronic Memories

HAWTHORNE, Calif. – Electronic Memories & Magnetics Corp. has announced the formation of a wholly owned subsidiary in Belgium. The new company, Electronic Memories & Magnetics, S.A., will be headquartered in St. Niklaas-Waas near Antwerp. Principal markets to be served are Belgium, Germany, France, England, Italy, the Netherlands, Denmark, and Sweden.

Electronic Memories & Magnetics, S.A. will initially devote its manufacturing to high-quality printed circuits for European computers, industrial electronics, and military manufacturers.

The printed circuit facility combines U.S. and European technology and will utilize screen as well as photo-etch processes. In addition, precision etching, plated-thru interconnects, and multilayer and precision metal plating will be performed. State-of-the-art equipment and processes will be employed throughout. Later this year, disk packs and core memory systems will be added to the Belgian product lines.

The parent company is a leading producer of memories and other products for the computer industry and of magnetic products for the electronic, industrial, and military fields.

COMPUTER STOCKS: TRADING SUMMARY

Week Ended October 10, 1969

COMPUTER SYSTEMS

EXCH	1969 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK % CHANGE
N	167-128	159 7/8	BURROUGHS CORP	+ 1 3/8	.87
N	69- 38	46 3/4	COLLINS RADIO	+ 1/4	.54
N	159-125	143 3/4	CONTROL DATA CORP	+ 1/2	.35
A	86- 54	82 1/2	DIGITAL EQUIPMENT	---	----
N	25- 13	18 3/4	ELECTRONIC ASSOC.	+ 2 1/4	13.64
N	98- 81	85 1/4	GENERAL ELECTRIC	- 7/8	-1.02
N	101- 75	101 7/8	HEWLETT-PACKARD CO	+ 3 3/4	5.82
N	144-107	141	HONEYWELL INC	+ 1	.71
N	360-291	346 1/2	IBM	+ 1 3/4	.51
N	157-108	147 3/8	NCR	+ 5 3/4	4.06
N	48- 35	42 1/8	RCA	---	----
N	50- 32	39 3/8	RAYTHEON CO	- 1/8	-.32
O	43- 24	26	SCI. CONTROL CORP.	- 1	-3.70
N	55- 38	43 1/2	SPERRY RAND	+ 1/8	.29
A	47- 26	46 3/4	SYSTEMS ENG. LABS	+ 6	14.72

PERIPHERALS & SUBSYSTEMS

EXCH	1969 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK % CHANGE
N	82- 59	88	ADDRESSOGRAPH-MULT	+ 1 1/8	1.43
O	71- 13	15 3/8	ALPHANUMERIC	- 1 3/8	-8.21
N	47- 32	45 3/8	AMPEX CORP	---	----
O	19- 9	14 1/2	BOLT,BERANEK & NEW	+ 1 3/4	13.73
N	17- 9	13 1/8	BUNKER-RAMO	+ 1 1/2	12.90
A	37- 18	24 7/8	CALCOMP	- 3/8	-1.49
O	38- 14	16 3/4	COGNITRONICS	+ 1/2	3.08
A	16- 7	7 5/8	COMPUTER EQUIPMENT	- 1/4	-3.56
A	27- 12	15 3/4	DATA PRODUCTS CORP	+ 3/8	2.44
O	22- 13	14 1/4	DIGITRONICS	- 1/4	-1.72
N	62- 0	74 3/8	ELECTRONIC MEMORIE	+ 4 3/8	6.25
D	18- 7	7	FABRI-TEK	- 1/8	-1.75
O	37- 13	13 1/2	FARRINGTON MFG	- 2 3/4	-16.92
O	21- 10	12	INFORMATION DIS	- 1	-7.69
A	39- 17	37 7/8	MILGO ELECTRONICS	+ 7	22.67
A	89- 59	73 1/2	MOHAWK DATA SCI.	+ 1/2	.68
O	118- 42	44	OPTICAL SCANNING	- 1	-2.22
O	31- 18	21 1/4	PHOTON	- 1/2	-2.30
A	40- 23	39 1/4	POTTER INSTRUMENT	+ 2 3/4	7.53
O	76- 54	55	RECOGNITION EQUIP	- 1 1/2	-2.65
N	61- 22	31 1/8	SANDERS ASSOCIATES	+ 2 3/4	9.69
O	85- 29	29	SCAN DATA	- 1	-3.33
O	36- 16	23 1/2	TALLY CORP.	+ 2 1/2	11.90
N	104- 85	101 1/4	XEROX CORP	+ 3 3/4	3.85

SUPPLIES & ACCESSORIES

EXCH	1969 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK % CHANGE
O	47- 31	35	ACME VISIBLE	+ 1/2	1.45
N	22- 11	12 3/8	ADAMS-MILLIS CORP	- 3/8	-2.94
O	27- 23	26 1/4	BALTIMORE BUS FORM	+ 3/4	2.94
A	29- 17	24 3/4	BARRY WRIGHT	+ 1 1/4	5.32
O	44- 26	30 3/4	DATA DOCUMENTS	+ 1/4	.82
N	42- 28	35 3/4	ENNIS BUS. FORMS	---	----
N	115- 65	114	MEMOREX	+ 17	17.53
N	115- 94	114 7/8	3M COMPANY	+ 3 1/2	3.14
O	37- 29	34 3/8	MOORE BUS FORMS	+ 1/8	.36
N	47- 36	42 7/8	NASHUA CORP.	- 1 1/2	-3.38
O	48- 30	40 1/2	REYNOLDS & REYNOLD	+ 1/4	.62
O	31- 23	23 1/2	STANDARD REGISTER	- 1 1/4	-5.05
N	36- 25	28 5/8	VARCO	+ 1/8	.44
A	20- 10	14 1/2	WABASH MAGNETICS	+ 2	16.00
O	34- 28	32 1/4	WALLACE BUS FORMS	+ 1/4	.78

SOFTWARE & EDP SERVICES

EXCH	1969 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK % CHANGE
O	14- 5	5 1/8	ADVANCED COMP TECH	+ 1/8	2.50
A	19- 6	19 7/8	APPLIED DATA RES	+ 1/8	.63
O	19- 6	7 1/2	ARIES	- 1/8	-1.64
A	94- 63	94 1/2	AUTOMATIC DATA PRC	+ 7	8.00
O	13- 7	10 1/4	AUTO SCIENCES	---	----
O	17- 7	7	BRANDON APPL SYS	---	----
A	21- 9	9 5/8	COMPUTER APPL	- 1/2	-4.94
O	16- 6	9	COMPUTER ENVIRON	- 1/4	-2.70
O	47- 14	14	COMPUTER NETWORK	- 3	-17.65
N	30- 19	22 1/2	COMPUTER SCIENCES	- 1/2	-2.17
O	40- 8	11	COMPUTER USAGE	- 1/4	-2.22
A	59- 37	49 3/4	COMPUTING & SOFT	- 5 3/4	-10.36
O	24- 4	4 1/2	DATAMATION SERVICE	- 1/4	-5.26
O	17- 6	7	DATATAB	---	----
O	15- 4	4 3/8	DIGITEK	- 3/8	-7.89
A	30- 9	11 1/4	ELECT COMR PROG	+ 1/8	1.12
O	30- 12	12	INFORMATICS	- 2 7/8	-19.06
O	19- 1	3 1/2	MATRIX CORP.	---	----
O	22- 4	4 3/4	NAT COMP ANALYSTS	- 1/4	-5.00
A	38- 23	37 7/8	PLANNING RESEARCH	+ 1 1/8	3.06
O A	11- 4	4 3/4	PROGRAMMING & SYS	- 1/4	-5.00
O	12- 5	5 3/4	SOFTWARE SYSTEMS	- 1/4	-4.17
O A	37- 3	4 1/2	STRATEGIC SYS	+ 1 1/4	38.46
O	36- 11	19 1/2	TBS COMP CENT INC.	+ 1	5.41
O A	12- 3	4	UNITED DATA CENTER	+ 1/8	4.58
N	155- 56	74 1/2	UNIVERSITY COMP	+ 8 1/4	12.45
O A	38- 22	29	URS SYSTEMS	+ 1/4	.87
O A	16- 7	8	U.S. TIME-SHARING	- 1/4	-3.03

LEASING COMPANIES

EXCH	1969 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK % CHANGE
O A	14- 8	10 1/2	BANISTER CONTIN	- 5/8	-5.62
O	45- 24	25 1/2	BOOTHE COMPUTER	+ 1/2	2.00
O	12- 4	5	COMPUTER EXCHANGE	- 2	-28.57
A	34- 10	13 1/2	COMPUTER LEASING	+ 1 5/8	13.68
O	12- 7	12 1/2	CYBER-TRONICS	+ 3/4	6.38
A	60- 23	33 3/8	DATA PROC. F & G	+ 1/2	1.52
O	16- 5	5	DATRONIC RENTAL	---	----
A	52- 24	28	DEARBORN COMPUTER	- 5/8	-2.18
A	16- 8	9 5/8	DPA, INC.	- 1/4	-2.53
A	45- 16	23 1/4	GRANITE MGT	- 7/8	-3.63
A	28- 12	12 1/8	GREYHOUND COMPUTER	- 3/4	-5.83
N	54- 22	27 1/8	LEASCO DATA PROC.	+ 1 7/8	7.43
O	9- 4	4 5/8	LECTRO COMP LEAS	+ 1/4	5.71
A	57- 23	4 5/8	LEVIN-TOWNSEND CMP	- 1 3/8	-5.29
O	8- 3	3 1/8	LMC DATA, INC.	- 3/8	-10.71
O	14-	4 3/4	MANAGEMENT ASSIST	+ 7/8	24.13
O A	12- 6	7 1/4	NCC LEASING	- 1	-12.12
A	43- 18	40 3/4	RANDOLPH COMPUTER	+ 2 3/4	7.24
O	34- 5	5 1/4	SYSTEM CAPITAL	---	----
A	28- 13	16 7/8	U.S. LEASING	+ 2 1/8	17.39

Exchange Report - Part III

Ancillary Proposals Complete Report

NEW YORK – The American Stock Exchange recently released a study prepared by North American Rockwell Corp. recommending a nationwide overhaul of the financial community's operational procedures.

The five major steps indicated that electronic data processing should be heavily applied and were covered by *Computerworld* in Part I and II [Oct. 1, 8] of this three part series.

Ancillary Proposals

In addition to the five principal recommendations, North American Rockwell made a number of ancillary proposals. Among them:

□ A member-firm system advisory organization is suggested to be set up by the Amex or by the New York and American exchanges to coordinate development of data processing systems and to set standards.

□ The report recommended that a central agency be established to provide a mandatory dividend reporting service under which publicly owned corporations would be required to report dividend distributions, tender offers, and other actions that could affect the inherent value of a security. This central organization would disseminate data to the entire industry in machine-processable form.

□ A proposed computerized filing system would speed customer account data to the registered representative. Extracted from digital storage on an on-line basis and supplied by high-speed printout or CRT display, the automated file could describe the customer, his investment objectives, and current portfolio. It could provide a copy of his current statement and full information about open orders and about the delivery and receipt status of certificates, money, and dividends.

□ Another form of automated filing system would provide the registered representative with research data for specific securities. Desk-side computer terminals would report the issue's ticker symbol, Cusip number, price performance, current quotation, primary market, dividend history, the firm's evaluation of the security, and any pertinent trading restrictions.

□ Specialized training programs are proposed for virtually all brokerage house personnel in view of the electronic data processing needs projected for the industry.

□ It was suggested that the printing of new certificates and the cancellation of old ones be automated and initiated by machine-readable transfer instructions.

Machine-readable certificates, ranging from punch-card size to standard 8 in. by 8 in. are under study.

CalComp Sees No Unbundling Need In Graphic Area

BOSTON – Complete separation of hardware and software prices by the computer graphics industry is unlikely, according to Lester L. Kilpatrick, president of California Computer Products.

Speaking before the Boston Society of Security Analysts, Kilpatrick said "unbundling" of hardware and software products by IBM, Control Data, and Burroughs and other computer manufacturers that may follow, would not influence CalComp to do likewise.

"Selling a CalComp plotting system to produce charts, graphs and maps without basic software required to make it draw would be like selling an automobile without a fuel system," he said.

According to Kilpatrick, the computer graphic segment of the data processing industry is growing at a faster rate than the computer segment.

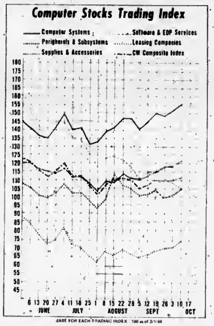
Kilpatrick said that CalComp's fiscal 1969 revenue of $20 million was primarily related to proprietary plotting equipment and associated software.

Increases in this area were about 34% above the prior year.

"We can increase our annual revenue rate to $50 million without a corresponding expansion of our present worldwide sales organization," he said.

"To reduce the percentage of costs related to sales and service as revenues increase, we are expanding operations through diversification and acquisition in industry-related fields.

"We have entered the disk file, keypunch and computer markets, each of which in total size is an order of magnitude larger than the existing markets for purely plotter-related products."



BASE FOR EACH TRADING INDEX 100 as of 3/1/68

Orders and Installations

A Burroughs B3500 has been ordered by the Harrisburg National Bank and Trust Co., Harrisburg, Pa., for demand deposit, savings, loan, trust, and mortgage accounting work. The system also will increase the amount of data processing work the bank does for other firms and will enable the bank to establish a central file system to integrate all related customer accounts.

Illinois Institute of Technology, Chicago, has ordered a 4700 system from Scientific Control Corp. to handle data communication to and from remote users as well as an IIT-written text editor. The system, valued at $93,000, will be used as a "front-end" for IIT's Univac 1108.

H.B. Maynard and Co., Pittsburgh, Pa., management consultant firm, has delivered its maintenance management information system (MMIS) to Union Camp's paper bag plant in Savannah, Ga. MMIS is a complete application software package that includes all programming, training, documentation, and installation.

Digital Equipment Corp.'s system for recording and interpreting data will be used for blood analysis at Royal Berks Hospital, Reading, England. The system includes a Line-8 laboratory computer and Labcom, software developed at the University of Wisconsin.

The installation of GE-635 Mark II time-sharing systems will be made at General Electric information processing centers in Los Angeles; Cleveland; Brook Park, Ohio; and Teaneck, N.J. The five systems are valued at nearly $15 million. A typical GE-635 Mark II configuration includes a central processor, card reader, card punch, printer, six magnetic tape handlers, a DSU-270 disk storage subsystem, and four Datanet-30 communications processors.

Palomar Financial, San Diego, Calif., will expand the capabilities of its data processing services with the system. The $950,000 system, ordered through Palomar's wholly owned subsidiary, U.S. Data Sytems, will be used in mortgage loan, savings, insurance, and general accounting operations.

Idaho Nuclear Corp., Idaho Falls, Idaho, has ordered an FR-80 computer output microfilm recorder from Information International. Idaho Nuclear's computer science center, operated for the Atomic Energy Commission, will use the $229,500 equipment to plot and produce microfilm recordings of graphs and charts of scientific data associated with the nuclear industry, and may record the data from core dumps obtained from program development.

DiAn Controls, Inc. has received an initial million-dollar order for a real-time, computer-controlled ticketing system to ease the passenger crush at the Orly Airport, Paris. This automated, people-moving system is designed to implement ticket handling throughout the Air France route.

Kentucky Fried Chicken, Louisville, Ky., has ordered an NCR Century 200 and six NCR Century 100s to help assure that its Colonel Sanders recipe reaches the public uniformly, wherever the chicken is served. The Century 200 will relay data summaries from nationwide regional offices to the Louisville headquarters. The 100 systems will be used as satellite systems in regional offices.

McCrory-McLellan-Green Stores, York, Pa., has purchased an SYS 3360 tape-to-tape translation system for the Univac 1111A to IBM 360 from SYS Associates, Inc. The SYS 3360 consists of two tape transports, one for Univac 1111 tapes and the other for IBM 360 tapes, plus a control unit for each transport and the converter hardware.

CDC has received an order for its 3150 system and 915 page reader from Methods et Traitment de l'Information (MTI), a Paris service bureau. The page reader will update customer account files which are then fed into a 8092 processor for editing, formatting, and conversion to magnetic tape; and the 3150 will process the tapes.

The National Data Processing Service has placed a 3-million-pound order for an ICL 4-72 to provide customs, airlines, and agents at London's Heathrow airport with a system to control imported cargo.

Trade Shorts

A 10% discount has been announced by Interdata, Inc. on all computers sold by the firm to recognized educational institutions.

Credito Italiano, one of Italy's leading banks, and Corporation S, the Dallas-based computer service company, have signed a contract to establish a joint-venture optical input automation (Optimation) service center. The Optimation center will be located in Milan.

Infocom, Inc. has changed its name to Fordax Corp., effective Oct. 6.

The company, in Wellesley Hills, Mass., provides computer hardware and software systems for numerical tape preparation in the metalworking industries, accounting for small brokerage houses, typesetting in the printing and publishing industries, and cost estimating for paperbox manufacturers.

Fordax also supplies business-oriented mini-computer systems for small companies requiring general accounting automation.

Astrodata, Inc. has established a new division for the design, development, and marketing of data acquisition and controls systems. Called the systems division, it will be headed by Donald E. Block, who has been serving as director of project management at Astrodata.

Product areas covered by the new division include large data systems, telemetry systems, and industrial systems.

On-Line Systems, Inc., New York, and Davis Computer Systems, Inc. have reached an agreement in principle that will permit DCS to provide direct access time-sharing services utilizing the large-scale PDP-10 time-sharing computers of OLS.

IBM Line-Up Moves Up a Notch

ARMONK, N.Y. — Four executive promotions have been announced in IBM's data processing operations.

Theodore C. Papes Jr., IBM vice-president, becomes assistant general manager, plans and controls, data processing group.

Charles E. Branscomb becomes assistant general manager, operations, data processing group, succeeding Papes.

Bob O. Evans becomes president of the systems development division, the position formerly held by Branscomb.

John B. Jackson becomes president of the federal systems division, succeeding Evans. He was vice-president, aerospace centers, and general manager, electronics systems center, for the federal systems division.

Papes joined IBM in 1952 and advanced through several sales positions to branch manager in Detroit in 1959. He was promoted to systems development manager for the former general products division in 1962.

He later held various group staff positions in product development, planning, and finance. He was named assistant general manager, operations, data processing group, in 1968.

Papes is a graduate of the University of Michigan.

Branscomb joined IBM in 1950 as an engineering trainee at the company's Endicott, N.Y., laboratory. After serving in a number of engineering posts, he was named director of product and development engineering in the former general products division in 1963.

Later he became group director of technical planning, and in 1964 he was made IBM director of instructional systems development.

He became president of the systems development division in 1966. Branscomb is an alumnus of North Carolina State College.

Evans joined the company in 1951 as a junior engineer in Poughkeepsie, N.Y.

He advanced through various research and development posts and in 1961 was named manager of systems planning and development for the former data systems division.

The following year he was promoted to divisional vice president, development, with responsibility for the development of computing systems that culminated in the System 360.

He became president of the federal systems division in 1965. Evans is a graduate of Iowa State University.

Jackson joined IBM in 1954 as a specialist in physical sciences in San Francisco. In 1957 he became the Washington, D.C., representative of the former military products division. After serving in several planning and systems management positions in the federal systems division, he was named general manager, electronics systems center in 1965.

He became vice-president, aerospace centers, in August of this year. Jackson is an alumnus of the University of Colorado.

COMPUTERWORLD

EDPeople

Greyhound Computer Elects Cooney Vice-President of Data Services

CHICAGO — Ned J. Cooney has been elected vice-president for data services of Greyhound Computer Corp., 74% owned by a subsidiary of Chicago-headquartered Greyhound Corp.

He will report to Gene E. Washington, executive vice-president, and will be responsible for data services operations and project management nationally.

Cooney, 37, has spent more than 15 years in data processing, marketing, and management. His most recent assignment was as manager of IBM's Chicago government, education, and medical branch.

He received a B.A. in business from Western Reserve University, Cleveland.

J.E. David Now Manager Of CDC Product Marketing

MINNEAPOLIS — James E. Davis has been promoted to the position of general manager for product marketing for Control Data Corp.

Davis, a B.S. graduate of Wayne State University, has been with Control Data since 1962, most recently serving as regional manager for application analysts.

In his new position, Davis will direct Control Data's product marketing organization reporting to V.E. Sieling, general manager, marketing and planning.

☐ Access Corp. of Cincinnati, Ohio, has announced the appointment of Robert Howart to the position of senior application market salesman to the medical field nationally.

☐ Eugene Axelrod, currently vice-president of Computer Learning and Systems Corp., Rockville, Md., has been elected a director of the company. In his position as vice-president and general manager of the computer learning division, Axelrod is responsible for the operation of the Computer Learning Centers.

☐ Don G. Thomson has been elected president of Arcata Data Communications Systems Division, a newly formed Arcata National Corp. domestic operation in Menlo Park, Calif. Thomson's responsibility will be to develop a program for Arcata to expand into the domestic real-time data communications systems business and to direct the acquisition or internal development of activities in this field.

Executive Corner

☐ The appointment of John C. Goldsworth as manager of marketing services has been announced by the computer systems division of Graphic Controls Corp., Buffalo, N.Y. In his new position, Goldsworth will be responsible for marketing support, including computer operations and sales training for the division's computer timesharing, technical consulting, and allied services to clients in educational, scientific, medical engineering, and business information fields.

☐ David R. Stott Jr. has joined Data Memory Inc. as director of international operations. The company is located in Mountain View, Calif.

☐ Western Operations, Inc., San Francisco-based computer management and planning firm, has announced the appointment of Neville R. Griffin as marketing director responsible for marketing the computerized system of mutual fund accounting developed by the company.

☐ Intranet Industries, Inc. of Los Angeles has announced the promotion of two key technical staff members. Larry J. Patin has been appointed manager of the diagnostic programming department of Intranet's engineering development division. Frank M. Stelle was named a senior systems programmer in the computer development department of the systems development division.

☐ Joseph F. Cashen has been named engineering director for industrial control systems at Honeywell's computer control division in Framingham, Mass. He will be responsible for hardware and software development and systems engineering for manufacturing and process control computers in the division's Series 16 line.

☐ Edward H. Kaymoky has been elected a director of EDP Technology, Inc., headquartered in Washington, D.C.

19-Year Univac Vet to Head SMC Computer Services, Inc.

DALLAS – The board of directors of SMC Computer Services, Inc. has elected William A. Campbell president of the corporation.

Campbell, formerly with Univac for 19 years, has been associated with data processing since 1944. Campbell has had comprehensive experience in almost every phase of computers and computer functions from a technical, as well as an administrative standpoint with Univac before recently joining SMC Computer Services, Inc.

His most recent assignment was that of resident manager of Univac's Ft. Worth office for over the past two years.

While with Univac, Campbell served as systems analyst, systems analyst manager, account representative, product manager, assistant branch manager, and branch manager.

During one period as Univac branch manger, he also directed the marketing activity of the Univac service bureau in Atlanta, Ga.

Campbell has attended numerous schools, training courses, and seminars in both technical and administrative areas and has won many awards and contests.

Campbell was elected a director of SMC Computer Services in March, 1969.

Gaskins Made Top Manager Of Caelus Data Products

SAN JOSE, Calif. – William M. Gaskins has been named vice-president and general manager of Caelus Data Products.

In his new position, Gaskins is responsible for directing and coordinating the activities of all departments within the company.

Gaskins was formerly vice-president of marketing for the firm, directing market analysis, product planning, customer services, training, and sales promotion.

While in this position, he developed and effected CDP's program for marketing their new line of Caelus 1100 Series single disk drives

Prior to joining Caelus Data Products, Gaskins was national sales manager for Memorex Corp. and was responsible for all domestic marketing activities of the supplies division as well as directing the 36 field sales offices.

Bell Now Responsible for Overall Operations of Computer Controls

MIAMI – Joseph J. Bell has been named executive vice-president of Computer Controls Corp.

Prior to being named to the new post, Bell served as Computer Controls' marketing vice-president. In his new post he will be responsible for Computer Controls' overall operations.

Bell's background includes experience acquired over a period of 20 years in responsible positions in business planning, management controls, computer consultation, operations research, and marketing.

A veteran in market management, Bell has extensive systems and applications experience in manufacturing, procurement, inventory, finance, and marketing of small, medium-, and large-scale computers; time-sharing computers, and numerous visual and hard-copy types of communications equipment.

He has been associated with such computer-oriented companies as GE, the Univac Division of Sperry Rand, Litton Industries, and National Cash Register Co.

Petschauer Takes Charge of Fabri-Tex's Memory Unit

MINNEAPOLIS – Richard J. Petschauer, vice-president of research and engineering for Fabri-Tek, Inc., has been named president and general manager of the firm's newly formed memory products division.

Petschauer will have responsibility for marketing, manufacturing, and engineering.

The memory products division, largest single operating unit within the company, manufactures and markets computer memory components and systems from plants in five locations.

Petschauer, with 13 years' experience in the computer industry, joined Fabri-Tek in 1962 as director of advanced product development.

Earlier, he had spent seven years with Univac, where he held the post of manager of film memory laboratories.

A graduate of the University of Minnesota with degrees in electrical engineering and business administration, Petschauer is the author of several technical papers on computer memories and holds patents on computer-related electronic devices.

Hoover III Made President, Digitek

LOS ANGELES – Herbert Hoover III has been elected president, chief executive officer, and a director of Digitek Corp.

R. Paul Tooppen, chairman of the board, has served as chief executive of the company since the resignation earlier this year of James Dunlap as president.

Hoover, grandson of the late president, resigned earlier this year as president and a director of the Sierracin Corp., Sylmar, Calif., to organize his own financial consulting firm.

He is a member of the board of directors of Amcap, Los Angeles-based mutual fund; Western Telematics, Inc., El Monte, Calif.; Pacific Scientific Co., City of Commerce, Calif.; and Electro-Numerics, Inc., Santa Clara, Calif.

A resident of San Marino, Hoover holds a B.S. degree in engineering from the University of Arizona and a masters degree from the Harvard School of Business Administration.

Musser to Administer Standard Computer

SANTA ANA, Calif. – David A. Musser has been elected vice-president, administration, of Standard Computer Corp.

Musser has been serving as director of finance and administration for Standard Computer. His duties include direction of personnel, purchasing, accounting; internal data processing, and budget and financial analysis departments.

A member of the National Association of Accountants, Musser holds a B.B.A. from the University of Minnesota and has attended Carleton College, the University of Washington, and UCLA.

King Made Leasco VP

NEW YORK – Robert E. King has been appointed vice-president, computer services of Leasco Data Processing Equipment Corp.

Formerly with IBM, King began as a sales representative in the data processing division in 1957 and rose through the ranks to become district manager of IBM's Chicago office.

A graduate of Northwestern University, King received his B.S. in marketing in 1957.

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